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UNIVERSITIES QUARTERLY

NOTES

University development

The Interim Report of the University Grants Committee on the years 1947 to 1951 has a remarkable story to tell. The universities and colleges have more than doubled the numbers of their students in science and technology; they have increased the number of their arts students by more than a half. On the capital side, " a beginning has been made with the heavy task of putting the housing of the universities on a satisfactory permanent basis ". All this, which has been made possible only by large grants from the Exchequer, has been done without any significant interference with the freedom of the universities each to maintain and develop itself in its own way.

Sometimes, not unnaturally, the Government has wished to see particular studies developed with more urgency than others; but in securing this end on each occasion the University Grants Committee has conducted itself like any other wise benefactor who has had ideas of his own; it has offered money for a specific purpose to a university which it thought likely to be willing to undertake the work, on terms which would make it possible to do the job well without damaging the other concerns of the university. " The universities have been most co-operative in their response to our suggestions ", the Report says, " and there has been no question of forcing upon them the adoption of projects which were unwelcome to them."

This represents a remarkable achievement by the Grants Committee, and the whole university world is united in feeling deep appreciation to its members and officers, and especially to its Chairmen, for doing so much so well and avoiding so many dangers.

Residential accommodation

There is naturally widespread disappointment that progress has been so halting towards the goal of making the civic universities and colleges more residential. Seven thousand new residential places have been provided in one way and another, but the proportion of

students in residence is smaller than it was before the war. It is probable that most, if not all, universities still stand firmly by their old faith in the residential principle, but forced by the recognition that, especially in view of the need for other buildings, provision of new halls will be slow, they are looking to other expedients for achieving, if less effectively, something of the same end. So far as the widening of intellectual interests is concerned, there are welcome signs that lectures of general interest are attracting more attention inside the universities, and are stimulating more discussions in the course of the working day and perhaps giving rise to greater liveliness in university societies. On the social side, Union buildings are being very fully used; but no doubt in most universities they are not large enough to meet the needs imposed by present-day numbers, so that there may be quite a percentage of undergraduates who never spend an hour in the Union. Athletic grounds are better used than ever, and athletics still have great value in bringing together people of different interests. But when all is said, the slowing up in the provision of residential halls is a serious blow, and it means that the universities must go forward more slowly along the road which they have adopted, never so clearly and unanimously as in the past few years, as their own.

The finance of the next five years

The Chancellor's statement of the total sum which he has in mind to provide for all universities and university colleges for the next five years must have made many university people sleep more comfortably in their beds. It would be most unwise to suppose that one can calculate from study of the total sum what resources will be available for particular universities or for particular studies. But for many, at least, their worst fears are allayed. It will be difficult, especially in view of the probability of rising costs, to sustain the development of ventures to which the universities are already committed; for most new things in the university world take time to mature, and a rise of expenditure for each project is normally inevitable for a number of years. For one thing, with the shortage of scientists and other scholars, staffs may be appointed young, or even have to be specially trained for two or three years. As they come to get their work into full swing, and as they come to greater maturity, their work inevitably requires more expenditure —for their own salaries, for technical assistance, for equipment and

for materials. But though many of these ventures will have to do their best on short commons, there is a general feeling that it is no longer likely that essential developments already embarked upon will have to be drastically cut back. The universities, with their unavoidable reliance on assistance from the government of the day, are happy indeed that their finances have become no party matter.

Student grants

The position about student grants is not yet clear; but it seems that there may be difficulties. There are signs that to support students in about their present numbers more grants are required than was calculated by the Working Party. The Ministry has now raised the number of the State Scholarships which it awards directly itself to the recommended 2,000; but of the 2,000 scholarships to be given by the universities and colleges and to be supplemented by the Ministry only some 1,300 were awarded in 1950–51. Moreover, the four-year training grant for intending teachers, which was accompanied by the "pledge" to teach, has been stopped. The Local Authorities as a whole have gone beyond the requirements foreseen by the Working Party; for in place of the 7,000 grants recommended they gave some 10,200 in 1950–51. These Local Authority grants were somewhat unevenly distributed over the country; some authorities, in some cases authorities for populous areas, gave as few as half the average for the country; others, and notably some counties, awarded as many as twice the average, and some of these have been disappointed with the results achieved by a proportion of the students concerned.

Meanwhile, there are also problems about the scale of grants. The new scale, for the three years beginning in September, 1952, is now under consideration by the Ministry, the Local Authorities and the universities. In the previous three years a substantial proportion of the Local Authorities considered the Ministry's scale of grants unnecessarily generous, and did not accept it for their own awards. It is obviously desirable that they and the Ministry should have an agreed scale of awards, and it may be that an attempt to secure this in the present discussions may bring into consideration some small variation in the principles involved.

In so far as there may be some conflict, in view of the economies desired by the Government, between number of awards and scale

of grants, university opinion, among junior and senior members alike, will be in pretty general agreement on two points: that grants must be just sufficient to enable an undergraduate to concentrate his undivided attention for his three or four years on a full student life, and that every effort must be made to maintain the total number of grants at something like the present level and to distribute them better over the country.

The late Master of Balliol

There must be many who fear that something may have passed away for ever, or at least for a very long time, when Lindsay died. He had the good fortune, or the vision, to be caught up when young in a great tradition which to his faith had not yet seen its high fulfilment.

Actually he was caught up in two traditions, the Labour Movement and Balliol. He was faithful in the grand manner to both; but no one can doubt that it was to Balliol that he gave his heart. With a sturdiness which he no doubt brought from Glasgow and from University he was not over-awed by what the Balliol of the " great " days had done for the contemporaries of his youth, and a little earlier. He saw that there was that in the tradition which could do even more, and things more worth doing, for the contemporaries of his own children after the First War. Around him there played a moral force in every educational and social cause that he touched; and he undoubtedly thought he was passing on what he had learned from the College. He gave one especial gift to those—and they were a majority in his life—who disagreed with him: they struggled hard that their principles should be no lower than his.

In his last years, after he was seventy, he was followed and cherished in his new University College of North Staffordshire by quite a wealth of students, by a gifted faculty, and by devoted members of his Academic Board from the sponsoring Universities. Could anyone else in our time have done it? Perhaps his secret lies in the spirit which lives in some of his last words at Balliol: " For me the College has always existed for the sake of the young men; and I hope it always will."

PHILOSOPHY IN THE UNIVERSITY

Introduction

Philosophy has the credit of having played in the past a great part in the British universities. In Oxford, as in Scotland and in Wales, a good proportion of undergraduates read some philosophy, and no one asked very closely whether its study was useful for a particular career. Many generations of graduates were undoubtedly glad in later life to have spent some time with the philosophers in their youth; many, indeed, thought that a university career was hardly thinkable without it. Very much of the discussion which older men remembered as playing such a memorable part in university evenings was concerned with subjects which were regarded as broadly philosophical; and the fact that a large proportion of undergraduates were having some philosophical training certainly strengthened these discussions. One result, and it was commonly thought of as a good result, was that in after life the big human questions, when they came up, did not take a man by surprise; he knew that he had heard them discussed in his youth and had even in some measure thought about them for himself. He also knew that they had been discussed by the great philosophers, and he had some general awareness of the various views which had been put forward about them.

There is, of course, an alternative tradition. Philosophy can be regarded as a very difficult subject, suitable only for able students who need to devote themselves to it on an intensive scale. Philosophizing, as the ordinary man thinks of it, may be deemed to be an unavoidable human activity, not unlike day-dreaming, to be discouraged, perhaps, and certainly not to be fostered at the university level. University philosophy would then be conceived as a highly specialized subject which is only of interest to the specialist. As with physics, the ordinary man may like to have "the present position in the subject" reviewed from time to time in very simple language; but he could no more engage in the activity pursued by the philosopher than he could engage in the activity of the physicist. Nor, if the truth be told, would he usually wish to do so; for when the position in philosophy is duly reviewed in these days for the plain man, mention is rarely made of the recognizably great questions. Kant's "God, Freedom and Immortality" have,

according to this conception, gone from philosophy, never to return.

In the past half-century the home of this tradition has, perhaps, been Cambridge, though in the past two decades it has captured Oxford, and has no doubt made some inroads into Scotland and Wales. In the English civic universities, which have grown to strength within the same half-century, the older tradition never firmly established itself, though no doubt many of the holders of chairs tried very hard to establish it. Philosophy never became part of the training of a university man, or of a very substantial proportion of university men. It remained a special subject, attracting far fewer students than for instance English or History or French. Its impact therefore on the scientific student, and on the university at large, has, in spite of the work of a number of distinguished and devoted philosophers, been correspondingly small.

The reasons for the reduced part played in the universities by philosophical studies are perhaps many. But they may be partly due to the triumph, whether temporary or not, of the second tradition over the first. There are many people in the universities, not least in the science and applied science faculties, who feel uneasy about it. In general indeed there is some fear that the voices of the main disciplines in the arts—philosophy, history, English literature, French studies—are not as strongly heard in many universities as they could be, or as they should be for the health of the body academic.

Two writers in the present issue seek to explain what has been happening, and what is now happening, in philosophical studies. It is hoped to continue the discussion of some of the general issues raised in the course of the coming months.

I. THE SCOPE OF PHILOSOPHY IN THE UNIVERSITY

By J. M. Cameron

Lecturer in Philosophy, University of Leeds

The changes which have come over English philosophy in the last thirty or forty years are immense and of so peculiar a kind that a good many people outside the departments of philosophy—and some within them—are coming to the view that philosophy has become so much a technology and has shifted its field of study and the centre of its interest so far that it is no longer able to refresh and clarify the minds of undergraduate students. Equally, some among modern philosophers are very eager, exchanging (to borrow a phrase from Professor Ayer) the role of pontiff for that of journeyman, to abandon almost all the claims traditionally made for philosophy and to represent themselves as no more than practitioners of logic and semantics.

Past and present

Even one who, like the present writer, was an undergraduate only twenty years ago, finds, if he compares academic philosophy today with that in vogue when he began his studies, that he has passed from one landscape to another. In my own college twenty years ago one had the impression—this was never put in so many words—that Bradley had got about as far as a man can get in the fields of metaphysics and logic. If one wanted to understand the problems suggested by the natural sciences, Kant seemed of all philosophers the one most likely to be of use. It is true, the situation was no doubt different in other colleges. There one might have subscribed to the more firmly outlined views of such a philosopher as Prichard and venerated Cook Wilson's *Statement and Inference*. It is true, I had read some Russell and Moore, though without really catching their significance. I am fairly certain I had not heard the name of Wittgenstein. Perhaps this sounds a little like a caricature; and it may be that I was an uncommonly lazy and immature undergraduate. Certainly, there were memorable experiences, experiences that I should still maintain, in the very different atmosphere of today, were philosophically important. I heard Professor Price deliver the lectures that were later to be

embodied in *Perception*. When I heard Collingwood lecture, it was without much immediate comprehension but with a vivid sense of a magnificent intellect slightly off centre. And one who has listened to Lindsay and Joseph is unlikely to confuse, as (I feel) undergraduates are now apt to confuse, the philosophical lifeman with the philosopher.

To the contemporary undergraduate or to the very young don this must seem like an age of fable. Others, who were my contemporaries, might want to give a somewhat different picture; but whatever the difference of emphasis, the suggestion of the fabulous would remain. It would, at least, be widely agreed that this was a period of transition from the Oxford of the late nineteenth century to the Oxford in which Professor Ryle holds the Chair of Metaphysical Philosophy; and, while there are other universities than Oxford, this period is one of transition in academic philosophy generally, at least in this country. The fundamental revolution had, of course, been carried through earlier, by Russell, Moore, and Wittgenstein; but the large consequences of this revolution only became plain in the late 'thirties.

What is the point of reviewing in this imprecise and impressionistic way the recent past of philosophy in the University of Oxford? It seems to me important to see that the present situation of philosophy in the English universities does not represent a sudden decline from a creative to a scholastic age. Although there is, I think, a sense in which academic philosophers twenty years ago did discuss real questions which are now often thought not to be questions at all, or to be somewhat improper questions, and to that extent philosophy today does provide less of a liberal education than it did, it is all the same true that then philosophy did not provide what some outside the departments of philosophy think it ought to provide now. Professor Ryle is not a perverse man who refuses to give what used to be provided by Prichard and Collingwood, something which could easily be given again if only Professor Ryle would set his mind to it. Many of those—not usually professional philosophers—who look at the fragmentation of university studies and the failure of the university to begin to give the undergraduate student a general culture tend to complain that all is not well because the philosophers are not doing or are not being allowed to do their jobs. What such persons are demanding of the philosophers is that they should provide the university with a *Weltanschauung*; and the implication is

that once upon a time philosophers did this, and everything was then much more satisfactory. The belief that at any period the philosopher *quâ* philosopher thought this was his job rests upon a misunderstanding of the history of philosophy, a failure to grasp that, for example, Plato and Aquinas were theologians related to a religious tradition as well as philosophers. The demand is really for a theology, and this may be a perfectly sensible demand; but it is not a demand which should be addressed to philosophers as such. No doubt there have been and are philosophers who have themselves failed to make the distinction; but the distinction has to be made if we are to talk sensibly and modestly about the place of philosophy in the university.

It may be argued that in the medieval university and in the Oxford Greats School at the end of the nineteenth and the beginning of the twentieth century philosophy was a synthetic activity which gave a certain unity to the various disciplines and bestowed a synoptic vision. I think this argument is unsound. Theology, not philosophy, was the queen of the sciences in the medieval university. The scholastic method, as a philosophical discipline, it could quite plausibly be argued, had a strong tendency towards empiricism and scepticism; and this is not surprising if we note that there was in the later Middle Ages that kind of preoccupation with the problems of logic which also lies at the root of modern empiricism. The Oxford Greats School down to 1914 is a more difficult matter to be sure about, for we are still very close to it and there are still with us many bred in that tradition who can speak with authority upon it. My impression is that what the Greats men acquired at the university was a certain approach—not involving specific conclusions—to a range of problems, an approach that might almost be called a mood; and this they acquired rather from Plato (Nettleship's lectures on *The Republic* are surely the most eloquent expression of this approach, this mood) than from Hegel, even a Hegel well let down with English beer. There never seems to have been at Oxford anything corresponding to that intoxication with the ethical doctrines—somewhat misunderstood—of Moore which fuddled the wits of the Cambridge of Keynes's generation and provided the Bloomsbury circle with its thin sharp version of hedonism. (Indeed, if we want to find an instance of a university in England providing something that looks rather like a *Weltanschauung*, it is perhaps to the Cambridge of Moore that we must look;

though it may be that Moore was not altogether understood by those who employed his doctrines in this grandiose way.)

The older philosophical training

It looks, then, as though the demand that philosophers should solve the problem of the fragmentation of subjects, the lack of a general culture, and so on and so on, is being addressed to the wrong persons. All the same, I think this demand, foolish as it may be, does sometimes represent a legitimate unease before the present state of philosophy, a conviction that something desirable was to be had from the older philosophical training, something not to be had from the training now most in vogue.

One example will illustrate what I have in mind. I think there can be no doubt that for the Greats men who read *The Republic* and listened to Nettleship's lectures the study of *The Republic* must have been not only a strenuous intellectual exercise but also a deep and moving imaginative experience. Here is a mind of the highest order, the mind of Plato, dealing in a comprehensive way with a whole range of problems and treating them in such a way that the feelings are moved as the intellect is exercised. What is in question is not the narrow issue—whether or not to this or that epistemological or ethical or other problem Plato's solution is the right one—but rather the legitimacy of the whole attempt to bring God, the world, and human life together within a single view. Whatever we may think of *The Republic* as doctrine, there is some sense in which it comes off, perhaps by reason of its poetic power. Some recent criticisms of Plato have tended to neglect this point—or it may be that they feel it with too much passion. What Plato gives us is more than, though it includes, philosophy in the technical sense, the sense in which Locke's *Essay* or Hume's *Treatise* or Russell's *Problems of Philosophy* are technical philosophy. It is true, there is nothing else quite like Plato; but much philosophy of the old-fashioned sort was in the tradition of Plato and was touched with his spirit; and in consequence it did very often provide an analogous kind of experience, one which students of philosophy in the university today may easily miss.

Even those who consider that most of the problems—perhaps all those of a metaphysical character—studied by old-fashioned philosophers were really pseudo-problems would probably agree that the study of these problems in the Oxford Greats School did

produce a certain temper of mind and a fineness of sensibility easy to recognize in those who have them but very hard to describe: " civility " would be as good a word as any. The School was in fact the bearer of a cultural tradition which goes back through the Renaissance and the Middle Ages to classical civilization. The intellectual disciplines that have been fruitful for the natural sciences are only one, though a highly important, element in this tradition. If, through a shift in the focus of interest of philosophy and through the increased importance of the role of the natural sciences and of technology in our culture, this tradition should lose its vitality, most of us would feel a sharp sense of loss and would begin to see, what is not now always quite plain, that there is a sense in which the university itself lives by this tradition and would itself decay were the tradition to be lost or to be treated as a kind of optional luxury for those who like that sort of thing.

The new situation

The philosophical revolution of our period is not yet over and the orientation of academic philosophy may have changed greatly in twenty years from now. It may be that, once the dust and smoke of recent years have cleared away, it will be seen that we have made very great advances in certain logical and linguistic techniques, that we have in particular learned a great deal about the right way of using the concepts of the natural sciences, and that *some* of the traditional problems, notably in the field of epistemology, have been shown to rest upon " category mistakes ". But most of the traditional problems may still be there.* On the other hand, we may hold that the main task of philosophy is " the detection of the sources in linguistic idioms of recurrent misconstructions and absurd theories ".†

If we take the latter view of the role of philosophy, then there are two things we might conceivably do to provide for undergraduate students an education analogous to that once provided by philosophy and its allied disciplines.

* *Cf.* C. A. Campbell, " Is ' Freewill ' a Pseudo-problem ? ", *Mind*, Vol. LX, No. 240.

† Gilbert Ryle, " Systematically Misleading Expressions ", in Antony Flew (Editor), *Essays on Logic and Language*. Basil Blackwell, 1951, p. 36. I do not know if Professor Ryle would now wish to defend this twenty-year-old statement. He admitted at the time that he came to this conclusion with " not very much relish ". But the historic importance of his paper is evident; and this is why Mr. Flew reprints it in his collection and places it first in order.

1. We might continue to encourage the reading of metaphysical and other traditional philosophers on the ground that their works, though strictly absurd (or perhaps capable of being given meanings acceptable to us but such that the philosophers in question would not themselves have recognized), do nevertheless provide certain emotional experiences that have a purgative effect. We might, that is, urge in favour of the continued study of a great deal of traditional philosophy the kind of reasons that Professor I. A. Richards advances for the study of poetry in our society.

2. But we might decide that some of the jobs hitherto done by the philosophers had better be done in future by the poets. This might entail constructing a school in which one would read Logic and Scientific Method, Politics and/or Economics, and English Literature. Something a little like this is already possible in Cambridge through the Tripos system; and there is a Joint Honours Course in Philosophy and English at Bristol. I do not suggest that either the Cambridge system or the Bristol Joint School is a consequence of this particular view of the status of philosophy; certainly, in neither place is philosophy so narrowly conceived. There are, of course, other strong reasons for combining the study of philosophy with the study of literature.

We should only be reduced to these strange devices were we to take the philosophical revolution in the ancient universities and elsewhere* as having shown once and for all and to the satisfaction of all reasonable men that traditional philosophy is a discipline concerned with bogus problems. It would then be as fatuous to urge the retention of this kind of philosophy as to argue for the setting up in the universities of chairs of astrology or phrenology. In any case, traditional philosophy only had a civilizing effect so long as it was taken seriously as philosophy. Once it became impossible to take it seriously, it would no longer have this effect. One cannot say one's prayers " as if " there were a God.

Technical arguments tending to show that the traditional problems —or some of them—are genuine problems even though one may, after what has been said by the analytical philosophers, want to use a different language in talking about them, would be out of place here. But it may all the same be proper to point out that not all

* " This movement of philosophic opinion . . . has gained momentum until it now dominates the philosophy faculties of Oxford, Cambridge, and London, is powerfully represented elsewhere in the United Kingdom, and even has outposts overseas. . . ." Flew, *op. cit.*, p. 1. There is a curious military or imperial flavour about this passage.

the penetrating intellects, even in this country, are on one side. Dr. Austin Farrer's *Finite and Infinite*, Professor Barnes's *The Philosophical Predicament*, Professor Emmet's *The Nature of Metaphysical Thinking*—these are not negligible works; and we may suspect that those who treat them as negligible have been overcome by the philosophical climate rather than by argument. Even among those who stand well within the tradition of Moore, Russell, and Wittgenstein there are signs of a less harshly defined attitude. Mr. Toulmin has suggested that " limiting questions "—that is, metaphysical questions—cannot altogether be got rid of, even though the answering of them may be a very queer and somehow unphilosophical business.* Professor Wisdom, in such an ostensibly unmetaphysical and even anti-metaphysical paper as " Gods ", cannot disguise his deep interest in metaphysical problems. Subjectivist theories of ethics, precisely because they have developed in such detail and with such logical power by recent writers, notably by Stevenson, seem now to be on the defensive. Few today attempt to defend the verification principle in its naif and dogmatic form. If we turn from England to the rest of Europe, the situation is very different. One has only to mention the names of Marcel, Gilson, Heidegger, Jaspers, Pieper, and others, to suggest how vast is the range of philosophical problems still thought, outside the English universities, to be worth discussing. And it would be highly extravagant to suppose that the widespread interest in Kierkegaard, the theological questions discussed by such men as Cullmann and de Lubac, the persisting interest in the metaphysics of Whitehead, all spring from muddle and confusion and propose no problems, other than those connected with " recurrent misconstructions and absurd theories ", of interest to the philosopher. Academic philosophers have at least a *prima facie* duty not only to forward the subject in their own way and along the lines that seem to them most promising but also to give their students some notion of the state of the contemporary debate. To treat a great many questions still strenuously debated as though they were bad smells is surely to neglect this latter duty.

Philosophy and other subjects

Ways in which philosophers may be of service to teachers and students in other faculties are discussed in another article by Mr.

* S. E. Toulmin, *An Examination of the Place of Reason in Ethics*. Cambridge, 1950, pp. 202 ff.

Toulmin. Here it may be emphasized that one's conception of the scope of philosophy will tend to affect one's view as to how this may best be done. In a symposium on "Philosophy at the Universities" which appeared in the UNIVERSITIES QUARTERLY in August, 1947, there was a contribution by Mr. T. D. Weldon, on the place of philosophy in the Oxford School of Philosophy, Politics and Economics, which brings out this point in a very striking way.

Mr. Weldon's article contains many acute and just comments on the teaching of philosophy in conjunction with political and economic studies. He shows that any school which brings together three subjects is faced with certain obvious difficulties, notably the difficulty that the undergraduate student will be disposed to concentrate on two of the subjects and let the third take care of itself. Is the remedy, then, to reduce the subjects studied to two? Mr. Weldon thinks not. He believes that much time could be saved and the work of the school rendered more effective and less burdensome if the scope of the philosophical part of the course were reduced. The reasons advanced for this reduction had better be given in Mr. Weldon's own words. After arguing that the most important methodological question in political and economic studies is what constitutes evidence and proof, he writes:

> . . . It is now well known that the structure and rules of language exercise a powerful and generally unobserved influence on the direction and nature of our thinking. They suggest definitions which are only too likely to be accepted uncritically as truths about matters of fact. Many of the metaphysical puzzles which were the bane of physics, biology and psychology from the seventeenth to the nineteenth century and which still have their devotees, can be proved to have arisen from assumptions derived from linguistic usage. Neither economics nor politics is immune to this complaint, but a study of logic and general scientific method is a reasonably safe inoculation against it, and such an inoculation is a necessity and not merely a luxury for the specialist as well as for the general student. Propagandists have at least a sound empirical knowledge of how to use the wrong kind of evidence to support their case and also of how to make a definition look like a description.
>
> The popular fallacy about philosophy, then, is the belief that it constitutes a separate body of doctrine with a separate subject matter of its own. In fact, however, the problem is not that of

> studying a third subject connected only arbitrarily with the other two; it is that of studying politics and economics in the most efficient way. Admittedly some of those who have pontificated and who still pontificate about philosophy do not share this view, but believe that they are acquainted with some esoteric and unscientific method of acquiring knowledge superior to that employed by less privileged investigators. This belief is irrelevant to the present discussion. The function of philosophy in Modern Greats is to encourage an analytical inquiry into the methodological and linguistic problems which are involved in scientific procedure in general and in that of the Social Science in particular. . . . Detailed historical knowledge of the views of our philosophical ancestors is by no means essential, since the development of discovery by scientific methods and not the progress of metaphysical system-building is what matters.*

I do not know if Mr. Weldon's view is still in any way representative. It strikes me as an extreme statement of a point of view that is certainly shared by a fair number of younger philosophers who would no doubt wish to express themselves with greater moderation. If we were to accept this evaluation of traditional philosophy, at least so far as its " truth-value " is concerned, we might still think it unfortunate that those who are to become professional men, administrators, teachers, and so on should be deprived of the experiences that can be had from the study of philosophy as traditionally conceived. It was Russell himself who argued that philosophy is to be studied " for the sake of the questions themselves; because these questions enlarge our conception of what is possible, enrich our intellectual imagination, and diminish the dogmatic assurances which close the mind against speculation; but above all because, through the greatness of the universe which philosophy contemplates, the mind is also rendered great, and becomes capable of that union with the universe which constitutes its highest good ".† I should not myself wish to support this conclusion, somewhat reminiscent of Spinoza, as to man's highest good; but Russell expresses here the passion and conviction of generation after generation of philosophers since Socrates, the conviction that the deepest and most far-ranging inquiries of the

* *Universities Quarterly*, Vol. I, No. 4, pp. 354, 355.

† Bertrand Russell, *The Problems of Philosophy*, Home University Library, n.d., pp. 249, 250.

philosophers are among the noblest human activities. I must confess that the jauntiness of those who are confident that these inquiries are today made only by boobies strikes me as a sign of barbarism.

It may be objected that this discussion is too much in the air to be useful in helping us to come to decisions as to what should be included in philosophy courses for honours students, how best philosophy can be associated with courses in other subjects, and what philosophers can do in the way of general education in the universities. I believe it is undesirable at the present time to urge with too much passion any particular way of doing these things. The point is that whatever is done or attempted is consequential upon one's view of the scope of philosophy, of the methods that are fruitful within it, and of the status of the traditional inquiries. Plainly about these there is (*pace* Mr. Flew) no consensus of opinion among English philosophers, and different, and sometimes very different, things will be done and attempted in the different universities. It has to be recognized that the *primary* business of the philosophers is to philosophize. If, as a consequence of their philosophical activity, they feel the need to make connexions with the theologians or the natural scientists or the poets or the social scientists or the historians they will no doubt do so. It cannot be their duty, at least, it is no more their duty than that of other university teachers, to consume a great part of their time in thinking out schemes for co-ordinating philosophy with other studies, if they are engaged in thinking their way through the present difficulties of philosophy. It is through such thinking that they serve the university. Philosophical activity cannot be a practical activity in the way some other academic activities are practical: the philosopher is not an "intellectual worker" with a defined contribution to make to the needs of society.* His activity is "superfluous". Precisely this is why philosophy has claimed to be the central core of a liberal education, as liberal education has been conceived by a variety of wise men from Aristotle to Newman. Whenever the philosopher has been transformed into a functionary whose ends are proposed to him by external authorities, philosophy has vanished and has been replaced by various kinds of pseudo-philosophy. It is also true that this degradation of philosophy is sometimes an appropriate punishment for the levity of philosophers.

* *Cf.* Josef Pieper, *Leisure the Basis of Culture*. Translated by Alexander Dru with an Introduction by T. S. Eliot. Faber and Faber, 1952.

II. THE PLACE OF PHILOSOPHY IN OTHER HONOURS COURSES

By Stephen Toulmin

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People have often remarked on the gulf which, in many of our universities, separates the philosophical faculty from the other faculties. But less often have the reasons for it been clearly understood. Many people feel that this separation is something to be deplored, and that a more active co-operation would enrich both sides. Looking for a scapegoat, their first reaction is to lay the blame on the philosophers themselves; and to use the gulf as a plausible argument against contemporary academic philosophy. It is the philosophers' parochialism, and their preoccupation with analysis, which have kept them from playing their proper part in the universities. The field lies open to the plough, but the ploughman stays at home, tinkering with his tractor.

There is something out of focus here, and in the following pages I want to show what it is. The gulf itself is undeniable. Even in such a joint school as that of philosophy, politics and economics at Oxford, the different elements are scarcely ever related: the larger and older the university, it seems, the more difficult are inter-faculty chasms to bridge. Still, one must not be in too much of a hurry to blame the analytic philosophers for this. Some of them may have been content to remain under cover, sharpening their weapons; and no excuses are needed for them, any more than for pure mathematicians. But many would wish to say, with Wittgenstein, that philosophy for them was not so much a subject as an activity—an activity concerned with a special class of logical questions, which can be raised enlighteningly about any kind of subject-matter—and it would be strange if, holding such views, they were yet stay-at-homes. Nor have they been. Wherever they have had the knowledge and the opportunity, they have been willing enough to try their hands and their ploughs in other people's fields: Mr. Little's recent philosophical study of welfare economics is only one of the products.

The forgotten fact is, that these other fields do not actually lie untilled and waiting for the philosophers at all, since the proprietors prefer to do their own ploughing. A great deal of philosophy, of a sort, gets taught as a part of courses in other subjects, though rarely

by people with a philosophical training and rarely under its own name. If academic philosophers spend so much of their time at home, improving their shares and coulters, it is largely for lack of an invitation to put their tools to use.

There is one important exception to this generalization. Whereas in the arts departments philosophy is commonly treated as " anybody's subject "—that plough is felt to be one that any hand can guide after a fashion—the demand for philosophy courses to be given to science students has, for once, been made direct to the faculties of philosophy. How it should be met has not been obvious, and is one of the questions I shall touch upon. Yet this problem is only part of the general problem, of how philosophy should enter into any honours course outside the philosophy school proper; and, since the place which the subject already occupies in arts courses is so often overlooked, I shall take this as my first topic.

Philosophy in arts courses

Let me just record two or three of the ways, and disguises, in which philosophy enters into other arts courses. To begin with history: in most honours courses " political thought " has a more or less recognized place. Aristotle, Hobbes, Locke, Rousseau and the Utilitarians are frequently found as set authors, and in some universities the political thought lectures are given by members of the philosophical faculty. But both at Oxford and at Cambridge there is a curious divorce. Since the creation of the Cambridge Economics Tripos in 1905, there has been no political philosophy in the Moral Sciences (i.e., philosophy) course, and on that side the subject has languished: when Marshall went off into " a Hell of his own " he took the political theorists with him. There has, however, been a regular course on the subject in the history school, in preparation for a paper on " Theory of the Modern State ". This has been less of a Cinderella than it might have been, largely owing to the stimulus given to it by Michael Oakeshott. Even so, college directors of studies have tended to think of it as a " cranky " subject, hardly fitting in with the rest of the Tripos: regarded as philosophy, too, the course would probably have developed more happily had it been less of a one-man band. One cannot help wondering how it would have affected the Cambridge philosophy school to have had some political philosophy to try its teeth on.

At Oxford, political philosophy has a place both in Greats and

in P.P.E., though no-one is especially happy about the way in which the subject is taught. Again, however, the courses for historians are effectively independent of the philosophy school; so that most of those teaching the subject do so either to history students or to philosophy students, but not both. This has its effects. Undergraduates reading history tend to complain that their work on political thought turns into a pointless drill: they are not given the chance to consider whether the things they have to read are true, and the arguments offered sound, but only such questions as which of the authors influenced which. Either, they feel, the texts should be studied for their own sake, i.e., more philosophically, or the subject should be abolished.

If the place of philosophy in history courses is fairly well recognized, its presence in English courses is more or less completely ignored. Certainly the idea of a course combining literature and philosophy is an attractive one: a great deal of literature raises questions of a philosophical kind, and can be understood better with some knowledge of philosophy. Only at Bristol, however, is there a formal joint school in the two subjects. Elsewhere, literature is supplemented either by philology and Early English, or by a mixture of philosophy and other things, taught by non-philosophers under some such title as " Life and Thought ". Students usually find such mixed courses entertaining enough to pursue, but they have unsatisfactory features. For philosophy so studied can easily turn into a kind of intellectual chit-chat, a picnicking at the gates of the subject, which does not train the student to think any more clearly or deeply, but rather gives him misleading ideas about the nature of philosophical problems. Too often lectures and books on " background " come to be treated, not as supplements to, but as substitutes for the original documents. The result is that students, especially those of only average ability, pick up one slogan per writer (Descartes: *cogito*, etc.), and come away knowing something about Coleridge's borrowings from Kant and Blake's animus against Newton, but nothing to speak of about Kant and Newton themselves. This is hard, both on the students and on the writers; for what Coleridge said about the " transcendental imagination " bears about the same relation to what Kant meant by the phrase as the preacher's use of the word " materialism " does to the epistemological doctrines of Lucretius; while what Blake anathematized under the name of Newton is as far removed from the original again. It is under-

standable if some of the better students feel the lack of a more strenuous intellectual training: they would be glad to have the philosophers they read taken more seriously, and discussed for more than their " influence ".

Similar difficulties beset the teaching of " history of ideas " in courses on economics and modern languages. It is pleasant, no doubt, to learn about the private life and political activities of John Stuart Mill, or of others who have " shaped the thought " of past centuries. But to do so is no substitute for a detailed and critical study of their arguments. This is rarely demanded, and could be made only under the guidance of people with a philosophical training.

Some illusory short cuts

Life and Thought, History of Ideas, Theory of the State: these are so many devices for not getting to grips with philosophy. In each case philosophical texts are studied, but in each the philosophical questions they raise are side-tracked, and the lives of the authors or the influence of the works is made to do instead. The same thing can be found in some Classics courses: the works of the Greek philosophers are there read not for the questions they raise and the arguments they present but for their literary and historical interest, and as an exercise in textual criticism. One even meets lecturers who deliberately direct their students' attentions away from the philosophical questions and arguments, on the ground that an interest in them is productive of unsound scholarship. Cornford, it seems, once caught A. E. Taylor napping over a textual point in Plato, and saw in this the intoxicating effects of philosophical curiosity.

Since Cornford had a perceptive philosophical mind, the policy did little harm in his hands, though one may regret its perpetuation by others. There are some respects, however, in which one must sympathize with the classicists. They certainly do not suggest that philosophy can be made easy: if they recommend abstinence, it is because they feel that small doses of the subject are worse than none at all. The courses on " life and thought " and the like are, by contrast, open to objection on this ground: they seem to provide a short cut to philosophy, a way of mastering it without taking too much thought. But they do so only illusorily. It may be possible to state the doctrines of the great philosophers in a few words, but the real training in philosophy lies in coming to understand the

questions these doctrines were advanced to deal with, and for most people the art of philosophical questioning is one that can be acquired only slowly and with tears. Intensiveness is indispensable, and how few university courses succeed in being both intensive and humane ! To be forced to pay close attention to arguments, rather than acquiring painlessly the superficial knowledge of a few philosophical doctrines and slogans, that is the thing.

Remembering how far slipshodness, woolliness and gossip are the dangers, I have even come to feel at times that the lamented gulf was unavoidable; and that, on the whole, it was better for people to keep off philosophy completely than to take it in small predigested doses. As Wittgenstein put it, philosophy is no good unless it hurts—unless we feel its impact on our own beliefs. Nor should we wish to see it taught in a way which deadens this impact, as " life and thought " and the like tend to do. Sugar-coating debases philosophy, just as it does religion. Remember the preacher whose jewelled and fur-coated flock the *New Yorker* showed bewailing his departure: " How difficult it will be to find another minister like Mr. ——: it is so hard to preach to people like us without giving offence."

Philosophy for scientists

If, then, we look more closely at the arts courses in our universities, we find that the picture of untilled fields hungrily awaiting the philosopher's plough just does not fit the facts. The question is, rather, whether attempted incursions by the philosophers would be welcomed. Of one thing we can be certain, that any proposal to make a formal course in philosophy a compulsory element in arts courses, as it is for undergraduates reading economics and classics at Oxford, would be widely opposed. Most arts departments would prefer to go on in their own amateur way rather than hand their students over, willy-nilly, to the professional philosophers.

Only in the more technical courses, such as those in the natural and applied sciences, are there virgin fields for the philosophers to work in. In recent years, there has been a growing demand that some sort of philosophy course be provided for science students. The scientists, well aware of the limits of their own expertise, have looked to the departments of philosophy for such courses. The question is, what should be included in them ?

The problems raised by this demand are the reverse of those

encountered in arts courses. There is no lack of intensiveness in science courses. The danger is not slipshodness but rather that students will expect philosophy to be presented to them in the same systematic way as dynamics and electromagnetism, and be dissatisfied with the subject if it is not.

A first attempt to tackle these problems has recently been made at Cambridge. There the Natural Sciences course is in two parts: in Part I, which occupies their first two years, students are required to take a selection of scientific and ancillary subjects, in Part II they specialize in some one subject, for instance, zoology or chemistry. There are plans, on paper, for introducing " History and Philosophy of Science " into both parts of the Tripos, but the Part I course alone is under way, and that only since last October. (Some account of the first term's work appeared in the *Manchester Guardian* for 12 December, 1951.)

This Part I course is one of a number of " half-subjects " between which students have to choose: as such, it represents about one-sixth of the syllabus for those who take it, and occupies three lectures and a discussion class per week for one year. Both parts of the course are specifically designed " to broaden and extend the scientist's understanding of his own subject." As history, therefore, candidates study the origins of modern science, from 1400–1800, along the lines of Professor Herbert Butterfield's book, and also the development during the last 150 years of key ideas in either the physical or the biological sciences. The philosophy part of the course is likewise confined fairly narrowly to topics arising out of the sciences, such as the place of measurement in science, the analysis of matter and motion, and the place of teleology in the biological sciences: " relations of science with ethics " appears in the syllabus rather as an afterthought.

No general survey, either of logic or of wider philosophical notions, is attempted: no doubt it was felt that the time available was not sufficient for this. Nevertheless this narrowness is a pity, and I doubt myself whether it will be possible to maintain it. The real classics in the philosophy of science—such as Galileo, Locke and Kant—are classics in general philosophy too; and it will be a nice task selecting the parts of their works suitable for science students to read without bringing in also the epistemological questions for which philosophers chiefly read them. Many topics in the philosophy of science are barely intelligible without a general training in logic:

one can hardly be expected, for instance, to grasp the point of Mach's objections to the views of his predecessors unless one has been introduced to the philosophical distinction between "necessary" and "contingent" propositions. If one wants to understand how science as it is done squares with science as the philosophers (including the philosophical scientists) have talked about it, one must have some idea of the philosophers' categories as well as of the scientists' procedures.

It will be interesting to hear how those who are taking the discussion classes for the new course find themselves getting on; and whether in practice they can make the points they want to make, to the satisfaction of their hearers, without adopting a wider approach than the present syllabus requires. Can one, when it comes to the point, split off a small part of philosophy to meet the special needs of science students, as is done with "Science German"? Indeed, have science students "special needs" in philosophy as they have in German? Are not the questions of philosophy too interrelated for this to be the case, and does not the philosophy of science open the door to all the problems of general philosophy?

There is one other practical problem about making philosophy an optional subject in this way; namely, the danger of its becoming a *soft* option. It may come to be felt that philosophy is a frill which can be afforded only by those who have given up hope of high honours, and that if a man really wants to turn himself into a physicist, zoologist or whatever, he should not waste time on frills. Yet the subject is one from which the best students stand to gain most. The greatest scientists have commonly contributed most to the philosophy of science; Einstein in our own day has written a good deal about the subject, and acknowledges a debt to Hume and Mach. At Cambridge, anyway, there is a good chance that "History and Philosophy of Science" may avoid becoming a dumping-ground for duds, since every Part I candidate has to take some ancillary "half-subjects"; but this danger is one which will have to be remembered when similar courses are planned elsewhere.

The principle of joint papers

If one seriously wants to know where the gulf between the philosophers and their colleagues has its origin, one should consider how the population of our philosophy schools is recruited. The philosophical questions raised by the sciences, I suggested, open the

door to all the problems of general philosophy—Kant among others entered by that door—yet in most of our universities science students who find themselves drawn towards the philosophical side of their subjects have no opportunity of transferring to philosophy. Nor is the situation appreciably different in the arts departments. There, too, by the time an undergraduate has had time to develop a serious interest in philosophy it is usually too late for him to take the subject up. Most of those who decide to read philosophy as undergraduates have to do so at the outset of their university careers.

This observation suggests one possible way of narrowing the gulf. (1) The first thing to ensure is that students who become interested in the philosophical side of their subjects have the chance during their last one or two years of turning over to philosophy. In universities following the Cambridge two-part honours system, the taking of Part I is a natural moment for undergraduates to change subjects, if they wish to. (2) This is not enough. So long as the gulf remains as wide as it is, the change will mean embarking on a new and unknown course and abandoning one's first subject completely. This being so, undergraduates, however keen, will have some compunction about making the change, and their advisors can hardly encourage them to do so. The option would be a more attractive one if they were able to keep a toe-hold, at least, in the subject from which they were transferring; if, that is, they could continue, after changing, with some of the work they would have done had they kept to their original subject. This would be the case if they were allowed to offer in their Final or Part II examination one or two of the papers they would have taken anyway, e.g., for history, the papers on Political Thought, Theory of the State, or Philosophy of History. The same principle could be followed in the case of all arts examinations including semi-philosophical papers: these, in each case, could be taken jointly by candidates who had read the same subject right through and by those who had changed over to philosophy half-way. (3) One consequential change in organization would naturally follow. If the semi-philosophical papers were taken in common by students in the philosophy and (say) history schools, they might well be taught for, set and marked jointly also. This more than anything would help to narrow the present gulf. For not only would it bring the philosophers into working contact with their colleagues in other schools: it would also help to improve the philosophy which, as we saw, already gets

taught as a part of other arts courses—taught by amateurs, and sometimes amateurishly.

The major advantages of such a scheme would be long-term ones. It would be hard to make the existing courses in " life and thought " and the like any more rigorous, as things stand, for lack of people qualified to teach them more philosophically. If the principle of joint papers were accepted, however, graduates qualified to do so would begin to appear; and in their hands there would be some hope of avoiding woolliness and gossip. In the long run, academic philosophy also stands to benefit. Those of us who think of philosophy less as an autonomous subject than as a training in methodical argument sometimes wonder where the future philosophers of science, history and so on are to come from. At the moment, the university system does little to encourage their production. First-year students who, at the age of 18 or 19, have already decided that philosophy is what they want to read, are not always those from whom philosophy itself has most to gain. It would be all for the good of the subject if more students had the opportunity of changing to philosophy after getting a basic training in other subjects.

This is only the outline of one possible scheme, on which I set no particular store. Let me, however, underline two things in conclusion. First, the main lines of the scheme here outlined are drawn from life. They are those of the new Ancient Philosophy option in the Cambridge Moral Sciences Tripos, which was introduced to make it worth while for Classics students who are attracted to philosophy to follow Classics Part I by Moral Sciences instead of Classics Part II. Secondly, reasons for the gulf between philosophy and other subjects are to be found, after all, not in the perverseness and parochialism of our philosophers, but in the way our university courses are organized; and any attempt to narrow the gulf must take account of this fact.

I. TECHNOLOGY IN THE UNIVERSITIES

By Sir John Cockcroft

Director, Atomic Energy Research Establishment

Technological education has been very much discussed in the post-war years and there has been general agreement that the higher productivity which is essential if we are to maintain and improve our standard of living, requires a still greater development of technology in Britain. Sir Ewart Smith, Chief Engineer of I.C.I., in an address to the British Association (*Advancement of Science*, Vol. VII. No. 27) has shown that since 1920 the yearly increase of productivity in the United States was almost exactly twice our figure whilst the number of first and higher degrees awarded in technology in the United States also increased at about twice our rate. He drew the broad conclusion that the rate at which applied scientists are trained for industry is a major influence in the long term trend of productivity. A distinguished U.S. engineer, Dr. M. J. Kelly, head of the Bell Telephone Laboratories, which is the largest technological laboratory in the world, recently addressed a Royal Society conference on technological education and concluded that " if the technically trained man, the engineer, now occupied the same area in your Society as he now occupies in that of my country, it would be necessary for you to increase your engineer graduates by at least a three to five fold factor ". It is well known that there are very great differences of productivity, of the order of 3–1, between different units of the same industry in Britain, depending on their technological development. Those of us who have served the Government during and since the late war have found only too often that the major limitation in development work in industry has been the shortage of technologists at the intermediate and higher levels. In spite of all that has been done to improve the output of technologists since the war, there is still an acute shortage, particularly of first class design and experimental engineers, of radio engineers, and chemical engineers. We must conclude therefore that there is an urgent need for a still further increase in the number of technologists in industry and the government service and we would like to have some improvement in the standards of their education and training. The education of the intermediate levels of technologists is the responsibility of the technical schools and local technical

colleges which prepare their students in general for the Higher National Certificate, the External Ordinary Degree of London University and the examinations of the professional institutes. Higher technological education has followed a different pattern in this country from that on the Continent. Technological education was there excluded from the universities and concentrated in institutes of technology or technical universities such as the Swiss Federal Institute of Technology at Zurich, the Technical University of Delft and the Technical High School of Stockholm. These institutes have earned a great reputation by the eminence of their staff, the standards of their teaching and their achievements in research. In this country, higher technological education has developed both in the universities and in the technical colleges of the larger cities such as Birmingham, London, Glasgow, Manchester. The controversy and disagreement have centred largely on the adequacy of our present system and in particular on the need for founding one or more new technical universities on the continental pattern.

The contribution of the universities

I have been asked to discuss only one part of this problem—technological education in the universities. I must therefore consider the contribution which the universities are making now to technological education and discuss how much this might be increased both in quantity and in quality.

The numbers of technologists in full time training at the university is given in the report of the University Grants Committee for 1949–50 (H.M.S.O. Cmd. 8307), as 11,000—about 13 per cent. of the full-time university students. From this student body, about 2,000 graduate annually with first degrees and 270 with higher degrees. About 75 per cent. of these graduates work within one or other of the fields of engineering. The universities have therefore made a major contribution to our needs by increasing their student body in technology from 5,000 to 11,000 in the post-war years. How much further can they go in increasing numbers?

Taking the broad picture first, there is little doubt that many of the universities have expanded to the limit of what they consider to be desirable and that the next quinquennium will be devoted largely to consolidation of their rapid development and in particular to providing some relief to their now overstrained accommodation. The further increase in technologists which is still necessary can

therefore only be provided in the universities by an expansion in a limited number of the universities as their new buildings come into use and new buildings are provided and by some shift of students from other faculties. Since there are already signs that the universities are producing more than sufficient arts students—who comprise 43 per cent. of the student body—it is not unreasonable to hope for a shift of a few per cent. of students from the arts to technology. We ought to get rid of the once strongly held feeling that education for technology is a lower form of education than education in the arts. If we look at the position of individual universities as revealed in the U.G.C. report, it is evident that they are likely to differ greatly in their capacity for increasing the number of technological students. Cambridge for example can probably not increase its present total of 800 technologists because of the overall limitation on Cambridge numbers set by college buildings. Bristol on the other hand produces only 200 technologists but will presumably produce more when its new buildings are completed. Edinburgh makes a very small contribution of less than 300. On the other hand it would seem to be possible for a quite large expansion to be made in the technological student body of the Imperial College of Science and Technology, which at present contributes only 900; the Manchester College of Technology, which contributes an equal number and the Glasgow Royal College of Technology, which contributes 1,200. Some of their departments might well be joined with similar departments in the university, to their mutual advantage. It may well be possible for one or two other technical colleges of the larger cities to be added to those for whom the University Grants Committee takes some responsibility. These colleges ought to be relieved as soon as possible from lower level teaching and should preferably be given full university status. We might perhaps in this way achieve a further 50 per cent. increase in the number of technological students without upsetting the balance of the universities. The additional teaching staff might be partly obtained by a much larger use of part-time specialist teachers from local industry and Government research departments—with benefits to both.

Quality in technical education

I should next consider whether the overall quality of our technical education requires improvement. This is a somewhat delicate

subject, which has been reported on by numerous committees, the latest of which is the Productivity Mission on the relations between Industry and the University in the United States. I personally believe that we ought to improve still further the quality of our university teaching in technology. The basic sciences should be taught during the first two years at a standard equal to that customary for honours degrees in the sciences though there could be an emphasis on applied science—this is the practice in the Swiss Federal Institute of Technology and the California Institute of Technology. We ought also to include some instruction in economics and administration so that the student becomes at least aware of the importance of this side of industry. By these means we should not only have a broader and sounder basis for meeting the rapidly developing technology of the future but we should increase the prestige and attractions of technological studies and thereby help to attract more first-class men into industry. If these changes are not possible within a three-year course we ought to be prepared to follow the continental practice and extend the training to a fourth year, when the necessary additional accommodation could be provided.

We ought also to increase and improve the post-graduate technological education in our universities, directed particularly to improving our standards of experimental engineering. The Productivity Mission pointed out that M.I.T. has 1,600 post-graduate students out of a total of 5,000 (of which 3,000 are residents). The total annual output of technological post-graduates in Britain is only 270. The funds available for post-graduate research at M.I.T. amount to three million dollars for independent research and twelve million dollars for sponsored research. The U.G.C. report does not give separately the funds available for technological research in British universities but from the figures given for departmental maintenance I should doubt whether any of our universities can provide for technological research 10 per cent of the M.I.T. funds for independent research. There have indeed been great improvements in many departments since the war but much more remains to be done. I have heard from time to time of very small figures—of a Chemical Engineering department in a large provincial city which has only about £1,000 per annum available for post-graduate research equipment: of a department of textile technology which has a similar sum available: of an Electrical Engineering department which has less than £5,000 for such work. In the present financial stringency

one cannot expect the sum available to the universities to be largely increased. I would suggest, however, that a relatively modest increase, of the order of one per cent. of the university budget, could have great effects.

I am aware, of course, that there are other important factors besides the availability of funds. There has been a long tradition in British schools of technology that students should leave the university to obtain experience in industry as soon as possible after graduation. The more enlightened industries have, however, encouraged post-graduate work in universities, often by sending back members of their staff who have completed their apprenticeship. I can think of many cases where this has paid handsome dividends.

The U.G.C. report does not give separately the figures for university technological staffs except in the case of the Imperial College and Manchester and Glasgow Colleges of Technology. From these figures it appears that the Manchester College has only 4 professors, as compared with 25 at Imperial College.

The need for greatly increasing post graduate research work strengthens the case for developing at least one quite large College of Technology. A college of 2,000 to 2,500 students distributed over 10 technological faculties would provide in each faculty a student body about equal in numbers to a large school of physics such as that of the Cavendish Laboratory. On normal staff student ratios it would provide a staff of 20 to 30 per faculty which would provide a powerful nucleus for research work. Experience shows that the development of powerful research schools is greatly helped by the existence of a strong staff. We ought to be able to build up one of our existing colleges to this level.

I believe therefore that the universities could make a further substantial contribution to technological education without increasing appreciably their total numbers. More encouragement and more funds should be provided for post-graduate research and there should be an improvement in the numbers and status of professorial staff in some of the colleges of technology. These changes could be made at a cost which need be no more than a fraction of one per cent. of our total expenditure on research and development in Britain today. I believe this would be a wise investment. I have no doubt that the University Grants Committee is already following the policy in many respects.

II. TECHNOLOGICAL LEADERS IN INDUSTRY

By A. M. Holbein

Chairman, Technology Committee, City and Guilds of London Institute

The function of the technologist varies with the size and nature of the enterprise he is connected with, but in both small and large concerns he must be more than a " backroom boy " and should therefore possess some leadership qualifications in addition to technological skill.

We risk developing a national inferiority complex as a result of all the accounts of superior productivity of many foreign industries compared with our own. A more complete international stock-taking would contrast this weakness with directions in which we undoubtedly exhibit superiority. Potentially our industrial future can rely on a supply of scientists and craftsmen superior to those of any other country. In both cases this position is largely due to our educational system and, so far as technology is concerned, both in numbers and in quality our technical schools are endowing our artisans and craftsmen with skill and understanding, which under good leadership can assure the maintenance of our position as the high-grade workshop of the world.

Then again, no country has such a highly developed trade union system nor one which is on such favourable negotiating terms with employers. However hesitant some of the unions may have been to adopt modern equipment and methods, the prospect is bright that with our backs to the wall they will rise to the occasion and co-operate fully in the modernization of our industries.

Undoubtedly for many years past the United States, Germany, and some other countries recruited more men of higher education for industry than we have done, but such education alone does not give us what we want. The qualifications of a good commercial or industrial manager are complex. We need, not only the creative talent of the scientist, but at the same time adaptability and a sense of proportion, demonstrated by an appreciation of the diversity of the factors which need to be solved in everyday practice. Any appraisal of the character of the great industrial pioneers will at once show that their success in every case has been due to a combination of many qualifications. This is true just as much today as it was in

past generations, and although " team work " has admittedly greatly increased, it is still to the drive and pioneering spirit of the individual that we generally owe the big success. Anyone can prove this by examining the careers of such men as Mathew Boulton, Whitworth, Ludwig Mond, or Nuffield, to select a few names almost haphazardly. Even if these men did not start with any advanced academic education they were endowed with high intelligence and the true spirit of the pioneer, ready to take endless trouble to solve their problems by diligent inquiry, always seeking aid from men with more specialist knowledge than themselves and, in addition, possessing an urge for efficiency, whether it was in getting the last thousandth in accuracy of measurement, the last ounce of some chemical synthesis, or the lowest possible cost of production.

Provided the academic education does not become so narrow as to suppress the inventive genius of the individual, but rather supplements this with a more solid foundation from which to advance, we should be able to keep pace with the times and breed British inventors and leaders equal to any others in the world. The engineer is the outstanding example of what we are looking for, whether we define him as is done by our own Institution of Civil Engineers as capable of directing the forces of nature to the service of man, or as we are told they do in America—as a man who can do for one dollar what any fool can do for two. By his education and training his intellectual equipment has been developed and his appreciation of the importance of craft and skill has been established, whilst in addition he has learnt the basic principles of production efficiency, both from the mechanical and the financial points of view.

Men who have proved themselves to be possessed of the requisite qualifications and character have been trained in many different ways and at many different universities and colleges, or indeed at none, but it may be useful to consider some of the outstanding men from one source, where in the earlier days the teaching was very different from that being given elsewhere, to see what were the factors that made for their success. I refer to the two colleges founded by the City and Guilds Institute in the second half of last century, one at Finsbury and the other the Central at South Kensington.

Some outstanding technologists

The first name to come to mind is H. A. Humphrey, who was not only one of the first students, transferred from Finsbury, when the

Central opened in 1885, and one of the first batch of Associates of the Institute (A.C.G.I.), but was the first man to be a Fellow of the Institute in 1892. At college he was trained as a civil and mechanical engineer: in those days a combined course, but so wide was the outlook engendered that when he joined Brunner Mond & Co. Ltd., he readily appreciated the chemical problems of that firm, and in the course of his long career he patented chemical processes concerned with the synthetic production of ammonia. One of his great assets was a deep fundamental knowledge of thermodynamics in all its applications that was much wider than that of most of his contemporaries. Another was that whenever he submitted a technical report it was accompanied by a full costing and an appreciation of the economics of the scheme. From 1890 till 1901 Humphrey was a departmental manager with Brunner Mond, but his ability and clear thinking resulted in his being given many jobs of organizing and starting up various new processes then being developed. In 1901 it was Dr. Mond who encouraged Humphrey to leave the firm and to practise as a consulting engineer on his own account. At this stage he was probably best known for his invention of the Humphrey gas pump, but he was at the same time specializing in the production and distribution of producer gas. It was, however, the outbreak of war in 1914 and the desperate shortage of explosives that brought out of Humphrey some of his best work. He had offered his services to the Government and was posted to the Department of Explosives Supply under the leadership of Lord Moulton. This department, which was responsible for the supply of explosives during the war, had the task of increasing the output of ammonium nitrate many hundredfold; the great part that Humphrey played in this effort was fully described in the Melchett lecture of the Institute of Fuel on October 19th, 1939. Suffice it to say here that he was largely responsible for putting into operation new methods and new plant for the production of ammonium nitrate which raised the pre-war peacetime production of thirty tons a month to many thousands of tons a week. After the war he was one of the chief protagonists in the fight for the Billingham scheme. The fight was won in the end and Billingham went ahead with Humphrey as consultant. Had it not done so it is frightening to think what the country's position would have been when war broke out in 1939.

H. C. Booth, another early student, was versatile enough not only to design the great wheels at Earls Court, Blackpool, Paris, and

Vienna, but also to realize a very practical application of scientific principle when he invented the vacuum cleaner; Booth's original patent in 1901 being the first in the world granted for this subject.

E. F. Armstrong may have had inherited virtue as son of the great H.E., but the training he had in chemistry at the Central under his father was the same as that given to all students, and E.F. certainly put it to good use in his later life. On leaving college Armstrong worked in Germany under Claisen, van't Hoff, and Emile Fischer, and, with Fischer, he established the existence of isomeric glucosides for stereochemical relationships, and their selective hydrolysis by the enzymes maltase and smulsin. On his return to London in 1902 Armstrong was awarded the Salters Company's Research Fellowship at the City and Guilds College, and continued his study of enzymes, working in association with H. E. Armstrong, Caldwell, and Horton.

In 1905 Armstrong abandoned the academic world and entered the chemical industry with Huntley & Palmer of Reading, where he was the first chemist ever to be employed. In 1914 he became technical adviser to Joseph Crosfield, later becoming technical director both of this firm and of William Gossage & Sons. Armstrong soon became an outstanding man in the chemical industry, and was invited in 1925 to become managing director of British Dyestuffs Corporation. Here his work consisted largely in building up dyestuffs against possible foreign competition, and in 1926 he took part in negotiations with Brunner Mond, Nobels, and the United Alkali Company to form, at the desire of the Government, the Imperial Chemical Industries, Ltd. He retired from the Dyestuffs Corporation in 1928 and returned to London to practise as a consultant. Armstrong's consulting work was largely concerned with the carbonizing industry, and he was appointed a director of the South Metropolitan Gas Co., and subsequently of the South Suburban and the Commercial Gas Companies. In the 1939 war he was appointed Scientific Adviser to the Ministry of Home Security and served on the Chemical Defence Committee. He was elected a Fellow of the Royal Society in 1920, and served on the Council of that Society in 1941 and as a vice-president in 1942–43. He also took a great interest in the Royal Society of Arts, and after being Treasurer for some years he became President from 1943–45.

Sir Ralph Freeman passed out top of his term in civil and mechanical engineering in 1900, winning the Siemens Scholarship and

Medal. In the following year he entered the consulting firm of Douglas Fox & Partners, who were at that time designing many bridges for the new Rhodesian Railway system, and for other African and South American systems. His ability immediately made itself apparent, and in his early twenties he was busy designing the famous Victoria Falls bridge. In 1912 Freeman was offered an attractive job with a large commercial undertaking, as a result of which he was offered and accepted a partnership with Fox. Although a consultant all his life, Freeman was intimately connected with large industrial undertakings, such as the Cleveland Bridge Company and Dorman Long & Co., and it was for the latter firm that he designed the Sydney Harbour bridge, his design including the method of construction and the temporary works involved.

Sir John Thornycroft is the creator of the world-famous ship-building and motor engineering firm which has built many of our destroyers, and provided both industry and the Army with thousands of lorries. Here is a man who combined his technical knowledge with leadership and business ability. Sir John is a past president of the Institution of Civil Engineers.

A. C. Hartley made his mark with the Anglo-Iranian Oil Co., of which firm he became chief engineer, in charge of the vastly complicated engineering problems which arise in a large oil undertaking such as this. In World War I he was concerned with Constantinesco in designing an interrupting gear which would permit machine-guns to fire through the propellers of single-engined fighters. In World War II he was responsible for one of the two methods used in Pluto (Pipe-line-under-the-ocean) by which oil was pumped under the Channel to the Expeditionary Forces in Normandy. Hartley was the designer of the " Hais " cable, which stands for Hartley-Anglo Iranian-Siemens. This was virtually a hollow cable through which oils could be pumped. Hartley is now President of the Institution of Mechanical Engineers.

Sir Pierre van Ryneveld went straight into the army from college and thence into the R.F.C. Distinguished war service led to his selection with Quentin Brand to undertake the first flight from England to the Cape and then to become Director of Air Service for the Union of South Africa. He played a main part in creating both the South African Air Force and the Civil Flying Services. In 1933 he became Chief of the General Staff, a position he held with distinction throughout the war.

Sir Bruce White, an electrical engineer, in addition to being senior partner of a very successful consulting firm, during the war as a Brigadier in the Royal Engineers, was responsible for the construction of the Mulberry artificial harbours on the hostile Normandy shores.

All these men were trained at the Central; but there were also many outstanding men trained at Finsbury. These included Sir Frederick Handley Page, who was trained as an electrical engineer and practised that profession for six years before being attracted by the new science of flying with heavier-than-air machines, and forming in 1909 the now famous Handley Page Company. The great part he has played not only in the design of aircraft, but also in their production, is a well-known story. He must have had a very sound fundamental scientific training to be able so successfully to tackle a new science from first principles.

Sir George Nelson, trained as an electrical engineer at Finsbury, has become the chairman of that great organization, The English Electric Co. Ltd., and its various associates, and has been well enough thought of by his industrial peers to have been twice elected President of the Federation of British Industries.

Sir Arthur Fleming, who has for many years been a prominent member of Metropolitan Vickers, has, amongst other things, been responsible for their very successful graduate apprentice scheme, and is an acknowledged authority on technological training.

It is perhaps invidious to have mentioned some names when there are many other old students of these colleges who have attained great eminence. Not all have achieved distinction in industry, for men such as Sir William Pope, C. G. Lamb (who played so big a part in the expansion of the work of the Chair of Mechanism and Applied Mechanics at Cambridge), Miles Walker, W. E. Sumpner, Sir Alfred Chatterton (in India), and E. W. Marchant, have all made their mark in the research and academic world.

This review of some of the distinguished Centralians is incomplete, but it does I think illustrate that they were men whose qualities included the ability to think fundamentally which resulted in a versatility and ability to overcome novel problems.

Early methods of training

Let us now examine the training that all these men had. Seventy years ago, in the midst of the industrial revolution, the problem of

training potential technologists and leaders was as urgent as it is now, but there was not then the experience on which to build. The Corporation and the Livery Companies met the challenge by forming the City and Guilds Institute, charged not only with the training of technologists and leaders, but also giving training in the wider field to include craftsmen and technicians who would be required in increasing numbers.

In the two colleges they founded at Finsbury and the Central at South Kensington they were fortunate enough to find, and wise enough to appoint, six remarkable men of deep knowledge who were at the same time great teachers with new ideas of the application of science to industry and to the everyday things of life. Armstrong, Ayrton, Henrici, and Unwin at the Central, and Perry and Silvanus Thompson at Finsbury, taught with an attitude of mind different from that which then existed at the universities. Instead of teaching the knowledge required to pass examinations students were made to think for themselves. The use of text books was discouraged, and by making the students carry out simple experiments, observe facts, and from them deduce the natural laws, they ensured that those students thoroughly understood the basic scientific principles, and were not the slaves of formulæ. They were then directed how to apply those principles, and given the attitude of mind to use them. Silvanus Thompson was constantly saying "Always go to the source", and this habit of working from first principles gave the students a confidence that enabled them to tackle a problem without that sense of inferiority that is likely if it falls outside the scope of their previous experience. At the same time as the application of the scientific knowledge gained was studied the students were made aware of the economic consequences and of the importance of economy in designing. But this was not all; these professors insisted on a wide outlook and taught their students the history of the science they were studying, and made them consider the economic, social, and moral consequences of the developments of those eventful days.

Breadth of education

A broad education is an absolute necessity for leaders in any field and the foundation for this must be laid at home and at school—probably one of the greatest advantages for any man is to be fortunate enough to have intelligent and broadly educated parents—but

it must be remembered that although it is widely felt that only a study of the humanities can provide this, nevertheless, breadth of education can also be derived from scientific or technological subjects if wisely taught.

Inspired teachers are rare and it may be too much to expect always to have such a galaxy when we most need them. Nevertheless, just as the teaching of such masters as Jowett, Lowes Dickinson, and Quiller Couch had a lasting effect in their own respective fields, so has the influence of the six great City and Guilds teachers inspired others, and has pointed the way to one method of proved effect of training technologists and leaders.

Other colleges and universities have had their inspired teachers and evolved their own proved traditions, but this insistence on the thorough grasp of first principles and the attitude towards tackling problems is one that could with advantage be applied more widely. It is men with this fundamental training that industry wants and not, as is so often supposed, men crammed with knowledge which seldom fits the actual task they are called upon to perform. The lesson surely is the importance of having teachers of the highest quality. In America many of the teachers come out of industry and so naturally give a practical bias to their teaching. Conditions here should be such that the best types of men are attracted both from the academic world and industry. If sufficient really good teachers could be provided they would gather good students around them and these could be taught the fundamentals without elaborate equipment. In this way we should be able to train in greater numbers the men that industry so badly needs.

III. IMPRESSIONS OF TECHNOLOGY

By Peter N. Ray

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I have recently returned to this country after spending six months in the United States as a guest at the Massachusetts Institute of Technology. In my capacity as " Guest of the Institute " I both served on the instructing staff and attended lectures and laboratories as a student, and feel that my impressions of life at what is perhaps the best known of the American Institutes of Technology may be of interest to readers of the *Universities Quarterly*.

Firstly, what exactly is an institute of technology? This is a difficult question to answer, but probably if one were to say that it is a cross between a technical college on a grand scale, and a university, one would probably not fall far short of the mark. In many ways it approximates closely to the technical college in so far as the freshman goes to the institute looking simply for vocational training. Somewhat to his surprise, and in some cases to his annoyance, he finds when he reaches his institute that while he does in fact receive excellent instruction in his chosen technical subjects, his education is by no means confined solely to what might loosely be termed " useful subjects ". He finds that he must devote a considerable portion of his time to study of the humanities—English composition and literature, American and world history, economic principles, psychology, music, international relations, etc. These prescribed studies in the humanities continue right through the normal period of four years required to obtain the bachelor's degree. They cannot be taken lightly as they are adjudged of equal weight with the technical subjects with regard to the student's final merit and classification.

Grading and examinations

This leads one directly on to consider the grading system. At M.I.T. (often referred to as " Tech."), and no doubt at the other technological institutes, everything that the student does in his academic work is carefully graded, the marks preserved and taken into account in fixing his final " grade " in that subject—honours credit, pass, low or fail. This applies also to his practical work, whether performed in the drawing office, the laboratory or the

survey field. To this extent, therefore, the student is on trial from the moment that he arrives until the day that he departs. At first sight this appears a harrowing form of existence, but it does at least avoid that frightful peak of anxiety that every student in an English university must surely feel in the few days before, and indeed, during, his final examination. The examinations at "Tech." are spread out—normally there will be held during the term three or four one-hour written examinations in each subject on the theoretical part of the work, the time for these tests being taken from the ordinary lecture hours allotted to the subject. In addition to these quizzes, there is in most subjects a final three-hour examination at the end of the term, and then the student's grade for that course is determined, and, I believe, announced to him. Many American universities and technological institutes work on the basis of a two-semester year, both semesters or terms being approximately sixteen weeks. Bearing this in mind, the number of examinations per term is not as excessive as at first sight appears to be the case. There is no doubt that the system does very definitely keep the student up to the mark—apparently where experimental trials of the English system have been made, they have met with conspicuous failure. The American student is used to a system of examination and grading; to a greater or lesser extent he has grown up with it right through his days at school and high-school.

Staff and curriculum

The student at "Tech." is of course fortunate in being taught by a highly qualified and exceptionally competent staff. That this is so may be judged from the fact that the American high school graduate is undoubtedly about two years behind his English counterpart entering the universities. During the same four years that the Englishman has at his university, the American is so steadily acquiring knowledge and self-confidence, that when he takes his bachelor's degree he has so effectively closed the gap that his knowledge and ability are at least on a par with that of his English counterpart. What sort of subjects does he study during his four years at "Tech."? This can perhaps be best illustrated by reference to the case of a potential civil engineer. Besides his courses in humanities, already mentioned, he will take the usual subjects associated in any university with the civil engineering degree—Mathematics, Hydraulics, Surveying, Materials, Structures, and Soil Mechanics. All of these subjects

are treated from a more practical standpoint than is usually the case in England. In addition to these, he will take purely vocational subjects designed solely to acquaint him with current ideas and practice in the particular branch of the profession that he intends to enter—such courses as Transportation Engineering, Highways and Airports, Sewerage and Sewage treatment, and so on. The American employer does expect the young graduate joining his firm to be more immediately of use to the firm, and it is to this end that these subjects are included.

The students

During his time at " Tech." the student will reside either at home if that be conveniently situated or in one of the dormitories or possibly in one of the rather more exclusive fraternity houses. It is interesting to note that student discipline and conduct within the dormitories and fraternity houses is very largely regulated by the students themselves. Some of the fraternities have a formal dinner in the evening, but those residing in the dormitories take their own meals on the cafeteria system. This allows the student to have his meal any time within a two-hour period, but he does lose thereby a great deal of the corporate spirit that formal dinners in hall help to generate.

The majority of students at " Tech." come from reasonably well-off families who can afford the high fees. For those who are unable to do so, there is a limited number of scholarships, and in addition there is a loan fund, by the use of which students are allowed to pay part of their fees retrospectively after graduation. Then, too, a number of students obtain financial assistance by working their way through college—working at such jobs as clearing the tables in the cafeteria, or cleaning rooms in the dormitories. A few take on outside employment in no way connected with the Institute.

To complete this brief synopsis of student life, it should be added that there are ample athletic facilities for almost every recognized type of sport—the only thing necessary to the pursuit of athletics that is at all deficient is time—so much of the student's day is taken up with lectures, laboratories and homework. Nevertheless, a large number do contrive to find the time, and " Tech." fields very good teams in most sports.

Mention should be made of the large and flourishing Graduate School. Graduates are eligible for appointments as assistants or

research assistants, the former combining research and study for higher degrees, with a limited amount of teaching and correction of papers. At the institute a great deal of emphasis is placed on graduate work and research, and the opinion was expressed by some students at the undergraduate level that the Institute was more interested in the graduate work. This would appear to be overstating the case, and it would be nearer the truth to say that both are considered important and essential in their own right.

Academic staff in this country will be interested in the status and position of faculty members. Taking into account the cost of living in the two countries, it appears that the financial position of the staff is roughly the same as in this country, but at technology the staff are encouraged, and indeed, expected, to take on outside consulting work, which in many cases doubles their incomes.

Is an institute of technology a factory manufacturing degrees? On the whole the answer must be " yes ", but I hasten to add, one in which it is very pleasant to work, and one which has so inspired past students that they have shown their appreciation of their training there, and their affection for the place, by large gifts and bequests.

The technological institute and the university

Do we need institutes of technology in the United Kingdom? To attempt to answer this question it is necessary to consider again the complexion of an American institute of technology, its aims, achievements and ideals. The belief is far too widely held in this country that these institutes are really only technical colleges under another name. Such is not the case. It would be more correct to say that an American institute of technology is a university dealing in the main with practical subjects, with arts subjects as subsidiaries. One of its aims is to produce large numbers of cultured qualified men who are at the same time essentially practical rather than theoretical in outlook—men who can immediately be trusted in positions of practical responsibility. There can be little doubt that this is achieved. Men who have graduated from " Tech." know the value of time, and realize it is too precious to be wasted by incompetence resulting from lack of application; this is part of their inheritance and training. They also know the value of research—one requirement for the bachelor's degree is the preparation during the fourth year of a thesis on some problem of practical interest. In this way they are early encouraged to think for themselves, and as a result

quite a large number do elect to remain for a fifth year, spent in the graduate school.

The size of the academic staff is such that it is possible for one or two in each department to be exempted for a number of years from all teaching duties, to devote their whole time to their own work. It is perhaps not generally realised that Dr. Terzaghi, now a professor at Harvard University, carried out the bulk of his pioneering work in the field of soil mechanics whilst serving on the staff at M.I.T.

In his interesting article " Technological Research in the Universities ", published in the *Universities Quarterly* in February, 1951, Dr. Petch states that in his opinion the amount of treatment afforded to the principles of management could well be increased for those students whose interests will lead them to be concerned with the management of a technology, and stresses the necessity for recognizing that there is a difference in the training required for managerial and scientific work. The Massachusetts Institute of Technology recognizes this, and provides special courses in business administration for those intending to devote themselves to management, and a business and management option in the fourth year for engineers who are likely to take technical posts with managerial responsibility.

At a recent meeting in Southampton, called by the Professor of Engineering, to discuss with employers the basic training of a civil engineer, it soon became apparent that the greatest defect in the present system of university training from the employers' point of view is the six or twelve months time-lag between the young graduate's joining an engineering staff and his becoming a useful practical man on whom the firm may rely. It is, of course, debatable to what extent a university should meet the demands of potential employers, but there can be little doubt that were it to do so completely, it would change its complexion from that of a university to that of a technological institute. If our universities can continue the supply of qualified men to fill the needs of industry and commerce without upsetting the balance between numbers of students of the applied sciences and arts, there would appear to be small necessity for change in this country. If, on the other hand, the unique character of our universities is threatened by undue expansion of the departments of applied science, then there is much to commend the setting up of technological institutes here. If such a time comes, then we have an excellent model, and one which we would do well to study, in the Massachusetts Institute of Technology.

SELECTION FOR UNIVERSITIES

By D. Crichton-Miller

Headmaster of Fettes College, Edinburgh

The articles published on this subject in the issues of November, 1951, and February, 1952, must be of remarkable interest to the "schoolmaster producer". Though opinions have varied, and the confused state of affairs has not been minimized, it appears that nearly all the important things have been said in these articles, and no conflict of fundamental principle revealed; and the general result is, on the whole, reassuring. It is certainly clear that many of our difficulties, particularly those described by Miss Lilian Charlesworth, are not due to disputed policy but to the natural reluctance of the universities to adjust their methods, except after a period of dignified delay, to the rapidly changing conditions of life in Britain. And that is as it should be. It would be disagreeable, indeed it would be harmful to our faith in them, if institutions like the Church, Parliament and the universities readily altered their customs to meet the economic or social variations of the day. But the moment has now been reached when the price of delay is too high. The present confusion—one might almost say chaos—and the extra work falling on certain people, particularly school authorities, make changes necessary; and they must be sweeping changes. The important thing to realize is that selection of the student class was governed in the past by circumstances outside the control of the universities. Now it is to be their prime responsibility. It is beside the point to say that the flow of students will automatically grow less as war conditions recede, or incomes become smaller, or unemployment rises, or what you will. The country has adopted the policy that the universities shall be filled; and filled without respect to candidates' economic circumstances; and this policy will be carried out even if it means paying students wages (which, it is interesting to think, may be calculated in relation to those received by their teachers). Selection (or engagement) of students is at present largely in the hands of the universities and will presumably be left there if the necessary machinery is devised. That this has not been done up to the present on anything like an adequate scale is clear enough. It is equally certain that there is nothing to prevent the emergence of an efficient system once the universities are convinced that the decisive hour has been reached.

But we must begin with first principles. The Vice-Chancellor of Reading rightly states that " selection for universities will never be properly based until we have decided what universities are for "; and Mr. York points out that, so far as undergraduates are concerned, the universities must be prepared to deal with two classes—those seeking vocational training and those seeking higher education for its own sake. In the selection of students this distinction should never be forgotten. In this age the country requires a number, which is approximately ascertainable, of doctors, teachers, engineers, vets. and so on; recruits for these vocations must be provided. We need not disregard the valuable over-lap between technical and general education which may take place at a university; nor the complications in certain professions, notably engineering, in which we are desperately short of first-class men, while third-class men are a drug on the market; nor the opportunities offered in some " vocational " departments for disinterested study or research. The fact remains that the output, and therefore the intake, of these departments must be geared to, and ultimately controlled by, the needs of the country. It is true that the machinery is " far from perfect yet ". But the goal is clear, and that is half the answer (or should we say two-thirds or even three-quarters of the answer ?) to the question implied by the Vice-Chancellor's remark.

The other part of the question is more interesting. Is there likely to be a continuing demand for higher education for its own sake ? If so, on what scale should the State be prepared to provide it ? And, finally, what standard should be demanded of those who aspire to it ? The first point should not be misunderstood. The Principal of University College, Hull, says: " Men seem to have realized that an Arts degree, even with high honours, may be unsaleable." That is well put, and students who go to the university to ensure their future livelihood do not come within the category now under discussion. But most school teachers would say that young men and women can still be found who want to go to the university even when they have been warned that on the economic side they have nothing to gain and may have much to lose. The types—more than one type and not all scholars—can be pretty easily recognized. There appears to be no evidence to show that their number is either greater or less than it was thirty years ago. On the other hand, there is every reason to believe that their identity has been confused, particularly on the Arts side, with those who

vaguely believe that a degree insures a man against starvation. The elect are relatively few, and it does not seem unreasonable to suggest that the State should be prepared to provide for all of them. If they are the right sort, and if they are to benefit from university work for its own sake, they will reach a higher standard all along the line than the vocational candidates. Such students can therefore be expected to show that intellectually they are at least up to the standard set by the vocational majority; and that they are by character and conviction worthy of the privileges of university life.

Responsibility of selection

The selection of vocational students will ultimately become a matter of choosing the best candidates for the quota in each profession. Some modifications may be allowed, but it does not seem possible to avoid this awkward conclusion. On the other hand, the universities must have a free hand to accept or reject their general (or non-vocational) students, just as they have a free hand in teaching and governing them while they are undergraduates. It is through its choice of general students that each university proclaims its character; and it is through the ideals fostered within its walls that the answer is given individually to the Vice-Chancellor's question.

This leads to the question of methods of selection and, incidentally, to one aspect of the problem that seems to have escaped notice. Several contributors have complained that the present system of making L.E.A. grants only to those who can show that they have obtained places at universities really means that the faculty committees, with neither time, nor experience nor inclination to do so, find themselves in the position of making many valuable awards annually. But nobody has pointed out the disastrous results that would follow if the process were reversed. If the faculties refused to undertake this responsibility it would surely mean that the L.E.A. selected all grant holders and the universities would be required to reserve places for them.

The three generally accepted methods of assessment are the school report, the Certificate of Education and the interview. There is sometimes value in sweeping generalizations; and it might be useful at this stage to suggest that there is not the slightest chance of obtaining satisfactory results by the use of any one of these alone; and that the combination of the three can, and should, give all

that can reasonably be expected or required. School reports are at present much less effective than they might be for a reason mentioned by Mr. York—that they are known to be used sometimes merely as formal certificates of character—and because the universities fail to give an adequate lead about the kind of report they require; or, indeed, because they give too much, so that the school authorities waste their energies in attempting to classify the candidates as very good, good, above average, below average, weak, very weak in a number of qualities which, taken individually, are hard to assess and, added together, resemble a puzzle with several pieces missing! It is not enough to give the head teacher a free hand; nor is it possible to resolve the report into a mathematical calculation. Quite candidly, it seems doubtful whether the universities have yet discovered how to get the best out of the headmasters and headmistresses in this respect.

Limitation of examination method

The General Certificate represents a test of academic merit. It is difficult to believe that the results, when read in conjunction with the school reports, can be seriously misleading except in a few cases. It cannot be supposed that this examination was ever intended to be the sole criterion of a candidate's ability—or potentialities—in relation to university work. Furthermore, any written examination is of limited value as a means of separating precisely the large number of candidates whose results fall in the middle zone. This examination is a perfectly good weapon for its purpose, but we are constantly trying to do too much with it. It may be worth mentioning, however, that in Scotland the bursary competition gives the opportunity of a second chance to any candidate who may feel that, because of illness or for some other reason, he did not do himself justice in the certificate examination. This is an arrangement which the schools appreciate.

The general opinion seems to be that interviews are desirable, but that the time factor makes them impossible or of small value. This argument is unconvincing. Let the matter be looked at in this way. An undergraduate accepted by the university for a degree course involves the staff in a considerable number of "man-hours". This amount will vary and cannot be exactly calculated, but no one will doubt that it can be less than 100, and probably it will be much more. Is it unreasonable to propose that one

man-hour should be given to the task of surveying by interview the material on which so much time and money is to be spent? This means an interview of half an hour by two members of the staff or of fifteen minutes by four of them. The oft-quoted practical objection to interviews—that there is no time for them—is based on a questionable estimate of what is practicable and what is not. Incidentally, I see that no one suggests that a headmaster or headmistress may find it impossible to devote enough time to the careful summary of every candidate's abilities, record and promise. That is reassuring.

Limitation of interview selection

The other and more impressive argument against the interview method is that university teachers lack not only technique, but also faith, in its use. It is, perhaps, not surprising that this should be so now; but it will be astonishing if it continues to be so. The whole trend today is in the direction of selection by personal contact, whether for National Service Commissions by W.O.S.B., or promotion to the highest grades of the Civil Service. University teachers represent the most intelligent section of the population. If they cannot make good use of the interview system, no one can. Difficulty often arises because too much is attempted through this method, which quickly loses value when its limitations are forgotten. For instance, it is not the way to achieve an exact order; it cannot be used except in conjunction with other tests; it will not lead to correct conclusions in every case, the wastage from misleading or negative results (perhaps 10 per cent. of each kind) being higher than the proportion of school reports that are unhelpful or of examination marks that are " mysterious ". It should be remembered that, if interviews are being used for selection purposes, time should not be wasted on the good or the very weak candidates. For them the perfunctory five-minute conversation is enough; the extra time is needed for the border-line group.

Professor Pascal makes some interesting points, one of which is that interviewers tend to choose candidates " in their own image ". This may not be a bad thing. The process of education is not mechanical, but depends in varying degree on the human relationship between teacher and pupil. If a professor meets a candidate and " takes to him " there is a better chance of successful teaching relationships than otherwise. Moreover, the subjective element is

present in the case of school testimonial and of written examination. The valuable thing about the triple test of record, examination and interview is that the candidate is judged in turn by those who have known him in the past, by those who do not know him at all and by those who are to know him in the future.

The future

Instead of summarizing the position, it may be of greater interest to make a forecast of the arrangements which will be in force in, perhaps, ten years' time. School heads will write one report only for each candidate; it will be on a standardized form and will show the order of preference for university entry and the choice of career, if decided. Interview boards will sit at regular intervals throughout the school year and will enable the best candidates to be accepted early, on the results of their previous year's examinations. The general students will be interviewed by representative university boards, but the vocational candidates by special boards, which will act for the profession concerned, as well as for the university, and which will be limited in their work by the quota system, based on national requirements and departmental accommodation. Attempts to judge between candidates who are destined for different careers will almost disappear and will be replaced by schemes for maintaining at different universities approximately the same standard of entry for each profession. Although the career students will greatly outnumber the general students, the latter will ultimately give to each university its character and strength. Final acceptance of all candidates will be based on the triple assessment of school testimonial, examination record and interview.

CO-OPERATION WITH THE UNIVERSITIES

By a Schoolmaster

Some years ago a university historian wrote an article in a contemporary setting forth some of the considerations that an examiner has in his mind when he marks scholarship papers. To one whose interest in history is casual, or, let us say more generously, non-professional, this article was both interesting and illuminating. As I remember it, it listed the qualities that an examiner would hope to find distributed in varying degrees amongst the scripts. One script might, for example, show that the writer could take a piece of history, tear the heart out of it and set down its importance in a few short, succinct paragraphs. Another script might reveal that its author could develop into the detailed, niggling (if the word will pass) historian willing to spend endless time on some of the obscure and, except for the historian, uninteresting details whose sum total makes a great part of history. Another, perhaps, might show promise that, without ever being a profound historian, its author might one day write in such a provoking or arresting or appealing fashion that he would add to the number of history readers. Perhaps, once in a while, the examiner might come across someone who felt about history in the same way as one of the greatest of history makers and not the least of history writers feels: " History with its flickering lamp stumbles along the trail of the past, trying to reconstruct its scenes, to revive its echoes and kindle with pale gleams the passion of former days."

The above is by no means a faithful précis of the article in question but it is not, I think, unfair to the general spirit of the argument, which was that the university values excellence of any kind. For a school history master this must have been a most helpful article. At a time when, at teaching level at all events, the relations between the universities and the schools are not much more than vaguely benevolent such positive contributions are much to be welcomed.

The present article shows some of the difficulties which face the sixth form master and some of the points on which he would welcome enlightenment as he goes about his work of recognizing and shaping pupils of university timber. Perhaps it would be better to read for " *the* sixth form master " " *a* sixth form master ". The problems of the mathematician are not those of the linguist: the sixth form master in one of our great day or boarding schools, spending a great

proportion of his time in the upper school, is, perhaps, a somewhat different person and is certainly in a somewhat different position from a sixth form master in a local grammar school who spends much of his time with the lower school and whose only private work with a potential scholar is done in the time he is willing to give up when his normal school work is over. Type A, mostly, one imagines, high honours men, probably have a useful connexion with the universities. Each year their schools send up a steady flow of scholars and commoners, probably some of their old scholars are university dons, perhaps they still keep up old university friendships, and so, in one way and another, they know the form about what the universities require in their candidates. There are, however, amongst the B type industrious, efficient schoolmasters whose connexion with the great universities is remote, if it exists at all. Some of them may have graduated years ago from a small university college. Their academic status is not very high. The quick answer here is that such people are not fitted for their jobs: quick, yes, but not accurate, for some of these men are not only competent teachers but are genuine students who have remembered the old professor's words: " Remember that when you have taken your degree, you are not a scholar: you have acquired something which will help you to become one if you work hard." Now it would be interesting for, say, a linguist of type B to know the answers to some of the following questions. What is the value of the general paper—I mean the paper in which a candidate is asked, for example, to write on the proposition that " It is important not only that justice should be done but that it should be seen to be done "? A mathematical friend told me that for candidates who can manipulate x and y with due dexterity, the general paper is irrelevant. This seems to me more epigrammatic than probable.

Is it true that almost anything can be forgiven a language candidate who does an outstanding prose? Will a neat, well-turned translation compensate for some lack of vocabulary? Are awards made on a mathematical or, rather, Graeco-mathematical, basis, by some system of totalling? There must be some vital reason for the α, β system of marking but it is a little difficult for the outsider to evaluate some of the pretty combinations that one sometimes sees. Would it be possible for the universities to be a little more specific about the amount of literature a candidate should cover? Is it safe, say, in French to go for a pretty good knowledge of the 17th

century drama, the romantic poets and dramatists and three or four of a dozen tempting outsiders? Does a candidate earn a good mark for reaching out to our own time and taking in a little Sartre or Supervielle or Camus? What value is attached to oral proficiency? And this above all: do the universities welcome derived criticism or do they prefer candidates who have read pretty widely in original texts but may have unconventional opinions? This point is of some importance for it may well be that fashions in high academic opinion are as capricious as the length of women's skirts. Certainly I remember that an old pupil of mine told me that in his university Lanson was all: a year ago I was credibly informed that in the same university the wind had veered in favour of Mornet: recently a young colleague told me that he had been told that Thibaudet was the man. In other words—would examiners agree that youth is a season made for enjoyment and that criticism is the last of the arts, to be practised only against a wide background of knowledge? Examiners are in some difficulty here, one can see. They might run out of material all too quickly if every question ran something like this: "Did you enjoy *Le Bourgeois Gentilhomme*? Why—or why not?" Yet it is true to say that, as far as the outsider can discern, examinations on the arts side show an undue preoccupation with criticism. A mathematical examination picks out mathematicians, a chemistry examination chemists, but what does a literature paper pick out? Littérateurs—scholars—critics? Maybe. Writers? No. It is not easy to see what positive steps can be taken to give credit in examinations for real creative ability, but it would be well if we could do more for potential artists. It may be argued that the real artist will always find himself and that for him the university is irrelevant—and there are not wanting great names to illustrate that point of view. Yet in the final literature schools there is probably so much solemn mediocrity, dutifully reeling off derived opinions, that an examiner longs to pick up a script by a rebel who can write. Literary rebels may not need the university: the university may need the rebels.

The schools, of course, are no wiser in this matter. At the sixth form level creation yields to criticism—it has to, because in the immediate future the only kind of writing which pays most pupils will be critical appraisals. What can be done to encourage the potential creator? It is hard to evaluate imagination and originality in terms of α, β and mathematical signs. Possibly candidates might

be allowed to put in original creative work—in fiction or verse or elementary historical research.

This is a convenient point for a relevant irrelevancy: a note on the common criticism made by the universities that candidates cannot write good, clean English—with the implication that if the schools did their job properly, anybody would be able to express clearly and directly such thoughts as he had. You might just as well expect candidates to play the fiddle pleasantly or paint an agreeable picture. It is difficult for those who live and always have lived amongst people who speak and write clear, grammatical English to understand what goes on in many of our schools. A young schoolmaster I know, who left a famous old school where standard English was the accepted method of communication to become headmaster of a school whose pupils deviated only occasionally into standard, was surprised to find that as many as four or five periods per week were allotted to English. His surprise was of short duration. Only the other day I was asking a new boy who had been sent to join my certificate form about the " course " he had used at his old school. The traditional answer here is, " I don't know the name, sir, but it was a green one." This youngster was more specific. " I don't know the name, sir, but it was one of them what you writ " ! So much time has to be spent on eliminating—with very moderate success—the most elementary solecisms that many an English master rarely gets round to a consideration of what constitutes a fit and comely prose. Besides, he may feel, humbly, that his own prose is nothing to brag about. Obviously. If it were, he would be a writer—or a don. This point is worth raising, for there is no close season for the teacher of English. He is always fair game. The criticism of the English teacher is no more helpful than the inevitable note by the examiners that candidates in French were very shaky on past participles. They always were: they always will be. So are the French. Ask M. Caboussat ! I know a linguist who tells his classes that he has thought and spoken so much of the French past participle that the rules for its use will be found, after his death, indelibly engraved on his heart. He may well be right ! We can take it for granted that Providence in its inscrutable wisdom has decided that only a proportion of our people will ever write neat English prose or master the rules that govern the use of the French past participle.

Such misunderstandings as exist between the schools and the

universities can be dispelled only by communication. How can this be established—especially at teaching levels? Not by the setting up of further panels, committees, study groups, commissions and similar get-togethers: the field of education, spacious though it is, is cluttered up enough already with well-intentioned groups. It is equally unlikely that the universities, separately or in combination, would consent to issue brochures or pamphlets for each subject of the curriculum. The call is to individuals—usually the best call. If, in each subject or group of subjects, an experienced university teacher would write an article on his own special line similar to the one mentioned at the beginning of these notes, he would do us all a service. Either it would be acceptable to the general body of university teachers and therefore a useful guide to us in the schools, or it would provoke argument and we might have a real battle of the books. In any case it might clear the air and clear our heads.

In some subjects at least there is scope for university teachers who feel that they have inside themselves a book which might serve as a guide to potential university candidates.

Perhaps the ideal way of communication is to invite a university teacher to a school to sit in for a day or two with the sixth form and then talk things over with the sixth form staff, but the difficulties of this method are obvious.

Finally there is the Third Programme. I seem to recall that years ago the B.B.C. ran a series with the general title of " Men Working " where a group of men of one trade or profession sat round and discussed common problems. There would probably be a big audience for a programme which showed a staff planning a battle or a group of advertising men devising a sales campaign. The weakness of an academic theme is that it attracts only the academic: yet in the Third Programme are to be found—and rightly so—features which would appear unlikely to attract a larger audience than a programme " Dons Talking "—with, possibly, a schoolmaster to add fuel to the flames or pour oil on the waters. No blueprint of the ideal university candidate would emerge from such a discussion but it would certainly be rewarding and might even be entertaining.

What has gone before is not very specific but it may provoke abler minds to more positive suggestions. In so many human problems the possibility of a solution is at the mercy of the qualification " given goodwill on both sides ". Here, surely, there is goodwill and to spare. Can it be translated into something more definite?

ENTRY TO MATHEMATICS COURSES

By R. E. Peierls

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In recent years the people concerned with admission of students to undergraduate courses reported that a good deal of difficulty and confusion had arisen from the multiplicity of applications and from students accepting places in several universities without notifying the departments concerned, or withdrawing at the last minute from a place already accepted. In this way places were often kept for applicants who did not turn up in the end and vacancies were left for which suitable candidates would have been available earlier.

In the discussion of this problem various remedies had been suggested, including a deposit to be paid either at the time of application or at the time when a place was offered, but it was felt that this would not be a complete remedy and in addition might, in some cases, cause hardship.

One other suggestion was that universities might agree to pool information and obtain in this way a central record from which the numbers of applicants could be ascertained and multiple acceptances could be recognized early. However, it was feared that such a scheme might result in a great deal of labour and also that, if it was conducted by any central authority, there was a danger that it might lead to interference with the freedom of students to choose the university they prefer or the freedom of universities to accept the applicants they regarded as most suitable.

For these reasons we decided to conduct, from Birmingham, an informal scheme of this kind for one year as an experiment. This, we hoped, would give us experience of what was involved and how much work it would cause, and would also provide some figures about the numbers of applicants and the extent of duplication.

We approached informally the Mathematics Schools of all universities and university colleges in England and Wales, with the exception of Cambridge and Oxford, where conditions are so different that it would not have been easy to fit them into the scheme. Of the other institutions the following agreed to co-operate:—Universities of Birmingham, Bristol, Durham (both divisions), Leeds, Liverpool, Manchester, Nottingham, Sheffield, and, in the University of London, Bedford College, Imperial College, King's

College, Royal Holloway College, University College, and Westfield College; and the following university colleges:—Hull, Leicester, North Staffordshire, Southampton, and the university colleges at Bangor and Cardiff in the University of Wales.

Although Cambridge and Oxford were not part of the scheme we asked for lists of students who had started on Mathematics Courses there in order to see how many of the students on our list had, in fact, been accepted at Cambridge and Oxford and we got lists from nearly all colleges in these two universities.

The investigation

The method used was to ask all participating institutions to send us, at regular intervals, lists of all applicants excluding those already rejected in March, when the first lists were obtained (who could hardly be regarded as serious applicants). From these a central card index of all applicants was made, and we sent back to the various institutions the names of the other places to which each of their applicants had written.

Most institutions require applicants to state where else they had applied and to give their order of preference. It had been known for some time that the information given under this heading was not always reliable. Since a simpler way of counting up all applicants would have been to count in each university only those who had given that university as their first choice, it was of some interest to find in what cases students had given more than one school as their first choice. Accordingly we asked for the names of all students who had marked their application as first choice to be indicated in the lists, and any duplications were notified to the institutions concerned.

Later we also asked each institution to let us know the names of students to which they had offered places and who had accepted this offer definitely. These acceptances were then notified to all the other institutions to which the student had applied. We did not report offers of places since we had no intention whatever of interfering with the freedom of students to decide for themselves which of several offers they wished to accept. Where it appeared that a student had accepted more than one place definitely, the institutions concerned were notified, but to guard against clerical errors, they were advised that, if they wished to take any definite action from this, they should confirm the position by approaching the

other institution. As far as we know there was only one clerical error, which was put right promptly.

The results obtained from this investigation are as follows:—

The total number of applicants on our file was . .	721
of these	11
had obtained places at Cambridge or Oxford, leaving effectively	710
applicants for Mathematics Courses at the universities and colleges covered by the enquiry.	
This should be compared with a total number of . .	454
places available normally, but several institutions stated that if necessary they were prepared to increase their number somewhat and, taking this into account, the maximum total with present facilities is estimated at .	484
The number of places remaining unfilled was . .	72
or counting the maximum number of places as available	99

When towards the beginning of the session it became clear that several institutions still had unfilled places we enquired whether they would be prepared to consider further applicants at that late stage even though they had not applied to those particular institutions in the first place. Most of the institutions that had places unfilled were willing to do so, subject to certain conditions. However, when we asked all those institutions that had filled their complement whether they had on their lists applicants whom they regarded as suitable for a university course, but had to turn down for lack of space, and whether they would be willing to advise these applicants that they might obtain places in certain other institutions, the reply was in all cases that they regarded none of the applicants still on their lists as really suitable. This was also our position here at Birmingham.

Interpreting the conclusions

If one takes this conclusion at its face value, it would seem that while there were over 200 applicants that did not succeed in finding a place in any university or college, these were not really of a suitable standard for entry. It is only fair to remark, however, at this point, that the year in which we conducted our enquiry was the first year in which the new General Certificate of Education replaced the Higher School Certificate, and several universities had considerable

difficulty in interpreting the marking under this scheme. In addition it may be that from past experience of the intense competition for entry one may have been tempted to reject applicants at the early stages not necessarily because they were not suitable for a university course, but because it seemed certain that they would not stand a chance of being accepted. Subject to these doubts, however, it looks as if there are not many applicants for courses in Mathematics at the present who fail to be accepted for lack of space.

The number of students who were found to have given more than one university as their first choice was 31. Several of these had been quite consistent in stating in every application they made (sometimes as many as six) that the institution concerned was their first choice. If one attempted to estimate the total numbers by counting first choices the number would therefore probably have been in error by about 50.

The number of applicants who had definitely accepted two places was only three and it would therefore appear that, in Mathematics at any rate, this trouble was not so serious as had been thought. There were probably rather more applicants who, after definitely accepting a place in one university, wrote later to withdraw their acceptance. Because of the unavoidable time lag in acceptances being notified to us, such cases would as a rule not have appeared in our records.

It is hardly necessary to stress that we did not offer any advice to other universities or colleges as to the action to take where students had given more than one first choice or accepted more than one place. In those cases which concerned applicants to Birmingham our practice was not to disqualify such applicants, but merely to demand an explanation from them. When this kind of question was raised with several applicants at the interview we gained a strong impression that the practice of giving different orders of preference in different applications was in some cases encouraged by the schools. We feel therefore that if the reasons for wanting to know the student's order of preference and the difficulties caused by unreliable answers to the question were known to the schools one might hope that the practice would cease, or at any rate be reduced considerably.

As regards the amount of work involved in conducting such an enquiry, we found that this was surprisingly small.

UNIVERSITY ADULT EDUCATION IN THE UNITED STATES

By Cyril O. Houle

Dean of University College, The University of Chicago

University adult education in England and the United States flowed in roughly parallel channels until shortly after the twentieth century began. About 1905, events took place in both countries which changed the main course each was following in providing higher education to the mature members of the community. The two streams of activity diverged sharply and now, almost half a century later, they are strikingly different in aim, method, and organization.

In both countries, the early origins of the work had been of the same sort. Individual professors with particular enthusiasm and vitality—mixed, perhaps, with a touch of wanderlust—went outside the boundaries of the university to seek a mature audience. If one examines the history of the American* colleges, one is able to trace many individual efforts, extending back almost to the beginning of the republic. Each was unique, each had an influence in its time, and in each—in the United States, at least—was destined to leave few permanent traces behind it.

In the next stage of development, which was the building of a stable programme, the United States followed England. First Cambridge and then Oxford began their organized university extension in the 1870s; soon academic visitors from the United States perceived that here was an activity that might be transplanted to their own shores. By 1890, a number of universities were offering their intellectual riches to the general public. There was a vogue for university extension and the readers of many journals were assured that a new era of Athenian culture was at hand. Everything seemed bright; everything soon was to seem gloomy.

For the early extension movement in the United States had grave difficulties and, as it grew, so did they. The programme had no adequate method of finance. Even worse, university professors failed to realize that mature and experienced adults might neither relish nor find profitable the diet prescribed for those in their late

* Canadians and Latin Americans are asked to excuse the use of this word in this article to refer only to the United States.

adolescence. As the novelty wore off, the adult students began to exercise their celebrated right not to continue or not to come in the first place. As suddenly as it grew, the programme collapsed.

The revival of university extension

The new University of Chicago, however, held fast to its work. Its young president, William Rainey Harper, had already won a great reputation in adult education and had a deep belief in the duty of a university to serve the world beyond its cloisters. From the start, he built into the structure of the University an extension centre programme, a correspondence instruction unit, a summer session, and a press. He found for these enterprises a staff of men dedicated to the work and fired with his own determination to make it succeed, no matter what modifications of practice were required. As the other universities laid their extension work to rest or embalmed it in their annual announcements, the University of Chicago finally became virtually the only place where a vital programme remained. The very journals which had formerly been so optimistic now reminded the University that it should learn by the experience of older and wiser institutions and not proceed with its folly. Not for the first time, nor the last, was the comment made that a university should concentrate on its proper work, leaving to others the alien field of adult education. By 1905, the situation of fifteen years before had been reversed. Everything seemed dim; everything was soon to grow brighter.

Harper died young, but the able men to whom he had given both vision and practical experience carried on his work. Many went on to university positions of great eminence, taking with them an enthusiasm for adult education. Also, paralleling the English experience, the extension outposts of the University in other cities were often influential in the growth of new universities which thus had an interest, from the start, in the work of extension.

England moved away in one direction from the old programme of university extension through the leadership of one man, Albert Mansbridge. The United States moved in another direction through the influence of many men. If there was one predominant figure, however, it was Charles van Hise who left his post as Extension Professor at Chicago to become the President of the University of Wisconsin. At that institution, he set the pattern which was to

become common to most of the state universities* and, in his reports and public addresses, he expounded the views which have been echoed and expanded through the years.

The central idea of the state university, as developed by van Hise and his contemporaries, is basically a simple one. Each such university is supported almost entirely by public money granted by a state legislature. It is apparent, therefore, that the university has a direct responsibility to the people of the state who supply the funds. This responsibility is exercised in several ways: through undergraduate and graduate teaching of as high a calibre as possible; through research of a rigorous sort; and through giving the people of the state direct opportunity to benefit from the teaching and research in ways which have relevance to their situations and needs. The university reaches out to touch directly the lives of the people and its boundaries become those of the state.

While the idea is readily understandable, its execution calls for a programme of great size and imagination, and the past fifty years has been devoted to working it out. In some states, it is far along toward accomplishment; in others, it has lagged behind. But, generally speaking, the state universities are now the major agencies of American adult education. The other universities imitate them, supplement them, attempt to correct their excesses, offer them guidance, and, in some cases, duplicate their efforts needlessly. They cannot ignore them.

In many states the university is not a single central entity. In

* The reader who is unfamiliar with American institutions of higher learning may perhaps be helped by knowing the general categories into which they may be rather brutally and arbitrarily divided. The figures given are for 1945–46 and include only continental United States. This article, because of limitations of space, deals only with those institutions (starred below) which correspond roughly to British universities.

Kind of institution	*Number of institutions*	*Number of full-time students*
Publicly-controlled institutions	624	833,803
*State universities and university systems		
*Separate land-grant colleges		
Separate state-maintained professional schools		
*Local colleges and universities		
Junior colleges		
Privately-controlled institutions	1,114	843,048
*Universities		
Separate professional schools		
Liberal arts colleges		
Junior colleges		
Totals	1,768	1,676,851

some, such as California, Georgia, and New York, it is spread over several centres of instruction being, in many respects, like the University of Wales. Some states have built separate colleges for such areas of subject-matter as education, mining, or law. Others, such as Florida, have established more than one university. And about two-thirds of the states have separate land-grant colleges.

The land-grant colleges

These latter institutions have had their own history. In the middle of the nineteenth century, there grew up a conviction that the then-existing colleges were too remote from life. A movement began which reached fruition when Congress granted public lands to each state for the creation of a college or colleges of agriculture and mechanic arts. Some states assigned these lands to the state universities; the majority created special new institutions. Since nobody knew very much about scientific agriculture it became necessary to found research centres. But the colleges were small and the country large, so that the total effect on American agriculture was not great. By the end of the century, there was a large body of technical knowledge but it was being put to virtually no use by the farmers who kept on using the models their fathers and grandfathers had set. A bridge across the gap was required; it was created in 1914 when Congress provided money, to be matched by the states, for the development of an agricultural extension service to be operated by the land-grant colleges.

The character of American rural life has been transformed by this programme. In the rural counties of America—and there are over 3,000 of them—there are men and women who serve as representatives of the land-grant colleges and whose sole function is to aid the people in these counties to learn. The work began by being entirely vocational and is still primarily so, but the range of interests has been enormously broadened and special attention is given to economic and social questions. This growth has been possible because the land-grant colleges have themselves expanded in size and scope. None of them are any longer the derided little " cow colleges " most of them were in 1910; some of them have become full-scale universities. It is interesting and instructive to consider the way in which their programme of adult education has aided them to gain stature and significance. They went out into the state to help the people; and the people, often brought into touch with a

college for the first time, were moved to support them with their tax money—and to support the full programme of instruction and research as it grew broader, despite the fact that large segments of that programme would not meet any immediately utilitarian end.

This lesson has not been lost on the other state universities. To the inspirational leadership of such men as van Hise has been added the practical realization that direct service to adult students is a powerful aid in the building of a university. Both kinds of incentive, coupled with a considerable inventiveness, have led to programmes of great size and complexity.

Let us choose the University of Wisconsin for illustration, both because of its historic eminence and because its programme is to-day one of the largest and best. The major activities can be briefly enumerated.

Courses of instruction were organized in 45 communities,* 10 of which had regularly constituted centres. These courses had an enrolment of 10,791 students. Approximately 450 correspondence-study courses were offered to a total enrolment of 15,214 students. The University-operated radio stations, with transmitters so placed as to reach most of the people in the state, maintained a full schedule of broadcasting, being on the air from nine to twelve hours daily. Since the University is also a land-grant college, it operates the agricultural extension service in Wisconsin. This service was able to list 110,367 farms, 50,038 farm homes, and 38,548 non-farm homes in which its work had had significant influence during the year. The Bureau of Information and Programme Services worked with various local and state-wide study groups in 697 communities to encourage and aid them in developing more significant programmes of study. Leadership and assistance was given to local amateur dramatic groups in 23 communities to aid them to write and produce plays and pageants on local and state themes. The Bureau of Visual Instruction maintained a film library of about 3,500 titles and circulated them during the year to 1,055 schools and 891 other groups. The Bureau of Lectures and Short Courses filled 2,585 engagements, including 26 for the Pro Arte Quartet. The University conducted 45 industrial management institutes serving 1,259 persons. The School for Workers offered 19 summer institutes for 542 union members representing 29 international unions and

* The figures given are chiefly for the academic year 1948–49 or for the calendar year 1949.

more than 200 local unions. During the winter months, the School offered 36 classes in 20 communities with a total enrolment of 836 students. Less formally, the School conducted many special short conferences, developed class-room materials, and provided consultative services on educational problems to many unions. The Bureau of Industrial Psychology supplied to many agencies both teaching and research services on labour policies and personnel relations in industry. The Bureau of Community Development worked in 66 localities to aid groups to study and plan co-ordinated programmes for local improvement. The Bureau of Sociology and Social Work offered 10 institutes and conferences in the welfare field, provided in-service education for the staffs of correctional institutions, and supervised the educational programme in the state prisons and reformatories. The Bureau of Government worked with many public officials, such as municipal attorneys, public librarians, and county treasurers in order to increase their competence and help them to serve the public more effectively.

A variety of programmes

At the close of so long a recital as the foregoing, one may wonder whether the University has left anything for anyone else to do. In fact, however, its work has proved a powerful stimulus to other agencies and groups. In Wisconsin, as elsewhere in the United States, it is generally assumed that, if there is any saturation point in adult education, it is still far in the future and there is room for great expansion by many agencies.

Nor does the University of Wisconsin do all that can be done. Other state universities have pioneered in other programmes as a few examples will demonstrate. The University of California has provided advanced technical and liberal education for lawyers, engineers, and other professional groups. The University of Minnesota has developed a large Centre for Continuation Studies to which groups come for a concentrated but brief programme of residential work. The University of Virginia has aided rural communities to analyse their own situations and to plan and execute programmes both of action and of further study.

The universities and colleges maintained by municipal governments have ordinarily restricted their work to class instruction offered in the late afternoon and evening. Almost invariably this instruction is concentrated in a single centre, utilizing either the regular

university buildings or special facilities maintained for the purpose of adult education. The central focus of the instruction is the provision of a programme leading to the bachelor's degree with concentration of study in several fields; in addition, there may be offered a number of other sequences leading to special certificates and diplomas and a selection of courses in such popular subjects as literature, philosophy, psychology, the fine arts, and the social studies. The students are drawn from all ages over twenty and all sections of society. Perhaps the largest single group are those who failed to secure a university degree when young and now wish to do so; there is a large number, however, with or without degrees, who seek no goal but knowledge.

The private universities located in cities usually carry on somewhat similar programmes. Columbia, Northwestern, Western Reserve, Johns Hopkins, Buffalo, Syracuse, the University of Southern California and other institutions like them have extensive evening centres often called, to the confusion of English visitors, " university colleges ". A few of the private universities (most notably Princeton, Stanford, and Yale) are not particularly interested in adult education. It is, indeed, doubtful whether they will ever do very much in the field since usually, as is the case with all three cited, nearby institutions have large programmes of service.

Several of the private universities have adopted an experimental approach to adult education. Acting on the belief that it represents an entirely new level of educational activity, as distinctively different from traditional university teaching as that is, in turn, from instruction in secondary schools, they have proceeded to construct programmes afresh, to try them out, and, on the basis of experience, to perfect them. Their point of reference is the mature adult and the groups to which he naturally belongs. Their assumption is that education is a lifelong activity and that the last fifty years are at least as worthy of special educational consideration as the first twenty. New York University (in its Division of General Education), Harvard (in several special programmes) and the University of Chicago (in its entire adult educational programme) typify this method of approach.

The facts so briefly sketched in the foregoing paragraphs indicate how far apart English and American university adult education have moved since 1905. The differences between the two are at once so marked and so subtle that one must have direct experience in both

types before one can appreciate their remarkable dissimilarity. Nonetheless the major differences are clear and it is, in a sense, descriptive of the American system to indicate in what important respects it differs from that of England.

English and American adult education

To begin, there is much greater variety of programme in the United States, in part because of the enormous size of the country and the complexity of its population origins and in part because each college and university has a completely separate identity. Except in agricultural extension there are no central governmental funds for adult education and therefore no regulations and categories to impose a certain degree of autonomy. The visitor from abroad who studies American adult education finds that he must begin his study all over again at every institution he visits.

Second, there is no single organization of students in the United States which parallels the Workers' Educational Association in England. Indeed such an organization would be strongly opposed. The universities work, formally and informally, with a great variety of organizations. As a result, one finds in the United States a large number of agencies and associations which consider that they have an active stake in adult education, although there is no one group with as rigorous and intensive a purpose as the W.E.A.

Third, there is a stronger emphasis on community values. The American adult educator is constantly trying to have a measurable effect on society by dealing with significant groups of people or with significant social needs. There is no escaping the fact that learning is finally an individual matter but, in the grand design of programme, the starting point is different.

Fourth, there is a greater concern with methodology. Considerations of teaching method in England ordinarily start with the assumption that there is to be a class and usually that there is to be a division in time between lecture and discussion. American adult educators make no such assumption.

Fifth, the number and proportion of adults reached is far larger.

Sixth, the offering of classes is predominantly through centres operated by the universities. The decentralized class programme which is so characteristic of England exists but it is far outweighed by the work in centres, which, Americans believe, has great advantage

in flexibility, choice of programme, and guidance of the individual student.

Seventh, there is less interest in transplanting standards appropriate to full-time undergraduate and graduate students and more interest in working out standards appropriate to the requirements of mature life. If this point were made separately or if it were viewed in terms of English goals alone, it would seem indefensible. If it is viewed, as it must be, in terms of the ends which American adult educators are trying to achieve, it becomes much more understandable.

Eighth, there is less of a sharp division between liberal and vocational education. To these two, the Americans in fact add a third general type: education for responsible citizenship, for effective participation in group activity, and for the creative discharge of the social responsibilities which maturity brings. English extramural departments have often brought both this type and vocational education itself in at the back door while at the front they were proclaiming their complete devotion to liberal studies. The American university adult educators find a task which they think needs doing and then go to work on it, expecting that the students will—eventually, at least—have the sense to select the better elements and move toward higher goals. A recent research study among the farmers in one state showed that they were as much interested in studying liberal and social subjects as they were in getting further technical knowledge; they have been led to this position by the agricultural extension service which started out forty years ago to seek entirely vocational goals and had trouble arousing interest even in them!

Finally, the Americans feel less of a compulsion to make their approach to programme planning through adopting the accepted university disciplines. Somewhat cavalierly, perhaps, they assume that they may begin anywhere they choose and build the kind of programme required to meet the goal they have in mind.

The great danger in advancing a list of differences such as the foregoing is that, while it may be true enough so far as the general situation is concerned, it does not indicate adequately the great variation in practice or the even greater variation in opinion in each country. In the United States, as in England, adult education has a number of critics, ranging from those who regard it as cheap popularization and vulgarization to those who think it still too austere in

its standards. The Americans are, in fact, a great deal more critical of their own work—perhaps with reason—than the English are of theirs.

As between countries, it is most dangerous to make blanket judgments. The English may feel, perhaps, that the American universities carry on work of far lower calibre than their own but ignore the fact that in the only part which is truly comparable—the study of liberal subjects—the United States probably has proportionately as many or more people enrolled. Conversely the Americans may criticize the English for the narrowness of their subject-matter approach without realizing that, once the rubric is set, there may be an amazing flexibility of content or method. The English may say that the Americans have let down the bars too low but be hard put to explain just how some of their own activities managed to make their way inside the universities' magic circle. The Americans may criticize the lack of community-consciousness in English adult education but not understand that perhaps the community already has such strong bonds and patterns that they may not or cannot be built or changed by adult education.

There is, in truth, a kind of pyramid of work in each country, at the base of which are the shorter, more transitory, and humbler activities, and the apex of which is reached by programmes whose loftiness of goal and rigour of standard is as high as the best undergraduate and graduate teaching. The task in both countries is to broaden the pyramid, to push its apex higher, and to try to see that as many people as possible move upward within it.

POST-GRADUATE SCHOLARSHIP DISTRIBUTION

By V. J. Chapman

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Within the last decade the number and value of scholarships and studentships for post-graduate research have been greatly increased. This increase has not been restricted to Great Britain and is reflected in the Dominions. Under the steadily changing economic conditions of our time this trend is not only to be welcomed but is essential if the best brains are not to be lost to the academic world.

I believe, however, that we have reached a point in university development where it may be desirable to consider the distribution of these post-graduate awards. By distribution I mean the country or universities where such scholarships are tenable. Within the British Commonwealth there is little doubt that by far the greatest number of these post-graduate awards are tenable only at universities in the British Isles. This is the natural result of the great age of some of the institutions and of the great distinction of some of the teachers at the more modern universities. There is also more money available for provision of equipment and facilities and there is the attraction provided by the vast storehouse of knowledge generally available.

Whilst this drift to Great Britain may have been inevitable in the past, conditions are changing and it is necessary to reorientate our ideas.

University subjects in Great Britain and the Commonwealth

Increases in university salaries in most parts of the Commonwealth are likely to lead in the near future to the point where distinguished senior workers will not inevitably migrate to England, but will be found in increasingly greater numbers in Dominion universities. It is true that there will remain certain subjects, e.g. Physics and English, where the facilities available in Great Britain will generally outweigh financial attractions.

On the other hand, there are other subjects in which far greater and indeed more lucrative fields are immediately available outside Great Britain. In particular I would mention the Biological Sciences, Geology, Geography and Anthropology. In these subjects

the field is becoming increasingly restricted in Great Britain and it is probably becoming more and more difficult to find suitable worthwhile topics for research students. There is no such difficulty in the Dominions where there are so many gaps in our fundamental knowledge to be filled that unless one is careful one's energies may be dissipated over far too wide a field.

It is increasingly evident that some decisive action is necessary in order that more workers may become available in the Dominions to provide us with this elemental knowledge. At the present time the cream of the post-graduate world from the different Dominions goes to Great Britain because the great majority of the scholarships are tenable there, and also for reasons that I have stated above. Whilst the Dominions may or may not regret this tendency, it is quite clear that the time has arrived when this one-way traffic should cease, certainly in so far as the biological and allied sciences are concerned. The Dominions now have opportunities and facilities to offer which in many respects are superior to those of Great Britain. The material is there and waiting, because unlike Europe practically every living organism one meets has yet to be investigated, and the universities have now developed to a point where the laboratory and other facilities are as good as those of most universities in Great Britain.

Scholarships and finance

It might be argued that the Dominions should provide their own post-graduate scholarships to attract students to carry out the work that is crying to be done. The Dominions, however, have neither the population nor the financial resources of Great Britain. Furthermore, many of the post-graduate scholarships offered within the Dominion or by other bodies, e.g. Rhodes, British Council, 1851 Exhibition, etc., are for study in Great Britain. Also, the total university population is smaller so that the number of students actually available for post-graduate research is smaller.

It is this situation that I have tried to outline above, with its one-way traffic that needs serious consideration and alteration. The conversion of the traffic into a two-way one would be of benefit to all partners in the Commonwealth. More students would be available to undertake elementary fundamental studies in the Dominions, and in some disciplines I believe this would result in a remarkable advance in the frontiers of knowledge.

It might be argued that the Dominion authorities should take the positive action, but I would suggest that this argument is not wholly valid. The Dominions have relatively few post-graduate scholarships of their own foundation, and it will be felt that most of these should remain as at present, thus giving Dominion students the opportunity of widening their contacts. In the Biological and Field Sciences the widening of contacts is now the principal value of such scholarships, rather than the opportunities for research or for working under distinguished leaders, for both these can be secured within the Dominions.

It is worth noting that within the last two years the New Zealand Department of Scientific and Industrial Research, as a result of university prompting, did make one of its six post-graduate scholarships available only to candidates in Great Britain and I believe there were something like 37 applicants in the first year.

Responsibility of British universities

The answer would seem to be obvious. In certain fields able post-graduate students are available in Great Britain who feel that there is vast opportunity for research in the Dominions if only the facilities are available to get them there. I have pointed out above that the Dominions can only assist in a very limited way. I would suggest therefore that the time is fully ripe for university authorities and for other bodies in Great Britain that award post-graduate scholarships to consider if they have not a duty to modify the terms of their awards and create a large number of scholarships tenable in the Dominion universities.

For over a century now the British universities have enjoyed the privilege of receiving the academic elite from the Dominion universities and while these bodies were growing up it was only right and proper that they should.

Now the Dominion universities have grown up and it is time that Great Britain reciprocated for what she has received in the past. The British universities will continue to receive from the Dominions, but there would seem to be more than a moral obligation for the British universities to take a major positive step in the establishment of facilities so that there will be a flow of post-graduate students to the Dominion universities, and what is at present almost entirely a one-way traffic will become a two-way traffic.

TEACHING BY FREE GROUP DISCUSSIONS*

By Minne L. Johnson

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I have for some time been concerned with the difficulties of teaching preclinical medical students to acquire scientific habits of work, for example, to observe and record accurately, to use language precisely and to evaluate evidence. Many students do not acquire such habits as a result of learning a body of knowledge, and I am experimenting with supplementing the ordinary methods of teaching with " free " or " analytical " group discussions. It seems possible that the method could be widely applied, and this article is written in the hope that others may be stimulated to explore its potentialities in their own fields of teaching.

For free group discussions as I am at present using them the class is divided into groups of twelve students. Each group meets once a fortnight for about two hours during the first preclinical year. For the first half hour or so the students work individually at an exercise, which they then discuss for the remaining one and a half hours. The exercises are designed to direct attention especially to the difficulties of observing, of using language accurately, or of evaluating evidence. An example of an " observation " exercise is one consisting of prints of radiographs of a child's hand and an adult's hand; students are asked to " List the differences you can see between these two hands ". An example of a " language " exercise is one which consists of a paragraph from a book on anatomy involving the words " normal " and " average "; students are asked to " Study the quotation and try to find out what it means. If you think the idea it contains is clumsily or erroneously expressed, rewrite it in your own words. Give all the definitions of ' normal ' you can think of." Details of some of the exercises and points which arise in discussion have been published elsewhere.† They will not be given here because it is not so much the intellectual content of the discussions which may be of interest and importance

* This work was done during tenure of a grant from the Rockefeller Foundation.

† M. L. Johnson. Discussion methods in preclinical teaching. *Lancet*, 2, 313, 1950.

to non-biologists, but rather the manner in which the discussions are conducted.

Some difficulties of being scientific

Briefly, many of the difficulties of "being scientific" in the sense used above are those of being objective. In teaching people to observe and record accurately, for instance, we are trying to train them to make statements which other observers can directly verify, or which are consistent with other verifiable statements. "Free" group discussion is a method of teaching by encouraging the exposure and recognition of the "subjective" or "personal" elements which enter into scientific activities to an unsuspected degree.

It is well recognized that personal bias affects certain kinds of intellectual activity, for instance, interpreting poetry, though even in this field it requires detailed investigation, such as the brilliant work of I. A. Richards*, to reveal the range of individual variation in response, and the extremely personal nature of interpretation. In scientific work also it is recognized that prejudice or bias of emotional origin may be influential. Students themselves can hardly have completed an elementary course in science without having learnt how often and how easily observations or experimental results may be helped to conform better with what is expected or desired. What is not so well recognized is that even in the absence of desire for a particular result, or any recognizable emotional influence, a process of selection of data nevertheless occurs. That this is in fact so is brought home by the diversity of response which different students make to the same exercise. For instance, in discussion of an exercise on observation, it becomes clear that to a surprising extent what is recorded is a function of the individual recording it. What seems to one student the most obvious or important difference between two radiographs may not seem so to others. In the absence of any specific instructions as to what to look for, each student supplies some himself, reacting in a manner determined by his own past experience, and by the immediate context in which the exercise is given. Each student is led to select certain things for mention, and not others, according to the way in which his attention is directed by his preconceptions about what to look for; and these preconceptions are not always the same as those of his colleagues.

* I. A. Richards, *Practical Criticism*, London. 1939.

The things he does not mention which others do he may say he has not seen; or that he has seen them, but rejected them as unimportant, i.e., irrelevant to his self-prescribed aim. An example of this was when a student who did not mention a (to others) very prominent shadow in a chest radiograph explained that he had thought it was the shadow of a wallet and did not regard it as important, i.e., of anatomical or medical interest. Actually it was of great clinical significance—the shadow of fluid in a pneumothorax. The importance for the work of a doctor or of any scientist of this kind of conscious or unconscious selection of data requires no stressing.

Again, in evaluating evidence it is of course well recognized that religious or political opinions may bias judgment, but it is not so clearly understood that other more cryptic subjective factors influence judgment on issues in which emotion is not obviously involved. In criticizing an account of some biological experiments and the conclusions drawn from them students were much influenced by factors which were quite extraneous to the data on which an objective opinion would be based, for instance, the fact that the paper had been published; the reputation of the journal in which it had appeared; the author's sex and nationality; personal tendencies to be either aggressively critical, or not too harsh, or to feel vaguely that one must take things on trust.

" Free " or " analytical " group discussions

The aim of free or analytical group discussions is to allow these subjective factors to be exposed and recognized. They are called " free " because the students are encouraged to express themselves as freely and spontaneously as possible, and " analytical " because an attempt is made in the group and by the group to trace the ramifying connexions of the statements the participants make. We do not aim to get at the " best " answer to the exercise in the quickest possible time. Rather we try to identify gradually the subjective elements which have stood in the way of their getting a suitable answer.

The role played by the teacher in free group discussions is difficult to define. Of major importance is the establishing of a " permissive " atmosphere. The conductor passes no judgments on a statement made, but only shows readiness to try to investigate its implications, in the course of which the extent to which it is right or wrong, useful or not useful, will become apparent. The tendency is thus

to enquire into statements, rather than to accept or correct them. Perhaps the role of the conductor is best described as that of trying to set a pattern of behaviour which it would be useful for students to follow; the amount of self-discipline required by this will be apparent. The main component is listening attentively, a habit which it would be nice for doctors to have, but one probably not maximally encouraged by the lecture system. It is necessary not only to listen, but to show signs of having heard, and this is done by trying to work out the implications of what is said, to recall statements made in earlier discussions relevant to the present one, to show consistencies or incompatibilities in the reactions of different students, and of the same student at different times. In the early stages this gives the teacher quite a lot to do, but students soon pick up the knack of doing it and take over themselves. It is then necessary for the conductor to say comparatively little—perhaps to supply factual information when necessary, to summarize the discussion at suitable intervals, or to show how, when it seems to get frustrated by detail, wider issues may be involved.

Comparison with other methods of teaching may help to make the essential nature of free group discussions clear. They differ fairly obviously from the lecture system, which, it might be supposed, is a less clumsy, time consuming, and painful way of giving students some understanding of the influence of subjective factors. The lecture system has, however, serious limitations; the emphasis is on the teacher *giving* information to the student. While it is realized by both teacher and student that what is accepted is usually rather less than what is given, how it differs *qualitatively* from what is given and what the student does with it is not usually enquired into by either party. In free group discussions, the emphasis is not on giving information to the student, but on examining the ways in which information he already has is affecting, usefully and not usefully, consciously and not consciously, his approach to new problems and his reception of new information. Further, free group discussions stimulate the student to active participation, so that he learns by direct personal experience how reactions are subjectively coloured, rather than by report as he would in a lecture.

The differences between free group discussions and other kinds of discussion groups are not so obvious. It is perhaps dangerous to attempt to generalize about discussion groups, which vary very much, but I will at least attempt to distinguish free group discussions

from the kind in which wide, controversial subjects are chosen as the topic.

The main differences are firstly in the subject of discussion, secondly in the mode of behaviour participants are encouraged to adopt, and thirdly in their main aims. Firstly, in the controversial kind of discussion group, the subject chosen is one about which differences of opinion are to be expected, indeed it would be disappointing and frustrating if none appeared. In our free group discussions, on the other hand, the basis of discussion is the exercise, to which ideally the participants would react scientifically—i.e., objectively, thus providing no differences of opinion. Secondly, as to mode of behaviour, in controversial discussions students are encouraged to defend and attack opinions and to stick to the point. In free group discussions by contrast students are encouraged to enquire into the validity and origins of the opinions expressed rather than to defend or refute them; they are not asked to keep to the point but to consider the possible relationships of apparently unrelated things, because it is only by following up an apparently irrelevant statement that its relevance for the student who made it can be unravelled. Thirdly, the main aim of controversial discussion is presumably to help participants to decide whether the evidence presented makes one opinion more tenable than another—the emphasis is on argumentation. The main aim of free group discussion on the other hand is not to reach a decision on a debatable issue, but to expose to the student the extent to which his reaction to present stimuli is influenced by his past experiences, and thus to gain greater control over his behaviour.

Free group discussions then differ considerably from controversial discussions, but they have some features in common with two other discussion methods which have been reported. Dr. Wilkinson's method of teaching interpretation of German poetry* depends on the free expression of personal reactions, the student learning by comparing and contrasting his reactions with those of his colleagues. Having participated in one of her classes I can testify to the extraordinarily invigorating effect of such spontaneous discussion. Mrs. Herbert† in her "interpretative group discussions" applies more directly some techniques of group psychotherapy. This may be

* E. M. Wilkinson. *German Life and Letters.* New Series, 4, No. 4. Group work in the interpretation of a poem by Hölderlin.

† E. L. Herbert. Interpretative group discussions. *The New Era*, 32, 203. 1951.

extremely fruitful for modifying social behaviour, but is probably less easily applied, at present at least, to intellectual difficulties in academic work. The technique of group discussion which I am using seems to be very similar to that described by Rogers*. It does not go so deeply into the determinants of personal reactions as Mrs. Herbert's does, but it has affinities with some kinds of group psychotherapy (see for instance Foulkes†, Rogers), and I would like to express my indebtedness to Dr. Foulkes, whose method of conducting therapeutic groups I have found very inspiring. No frank psychotherapy as generally understood, however, is supplied by my free group discussions, though any increase in self-knowledge, such as they aim to achieve, will be therapeutic if it enables the individual to adjust himself better to the situations with which he must cope.

Free group discussions offer a rich field for research on some of the difficulties of thinking clearly. It is not sheer ignorance of facts or concepts (though there is plenty of it) that is the main stumbling block to effective thinking among medical students, but the ramifying system of scarcely recognized notions attaching to a topic. In discussions these can be observed, and seen either to be useful, or to predispose to inappropriate ways of thinking. I suppose that as teachers we have fairly clear ideas of what we think students ought to know, and how they ought to think. A naturalistic study of what is connected with what in their minds might go a long way towards matching achievement with aim.

* C. R. Rogers. *Client-centred therapy*, New York. 1951.

† S. H. Foulkes. Group therapy: a short survey and orientation with particular reference to group analysis. *Brit. J. Med. Psychol.* 23, 199. 1950.

LETTER TO THE EDITOR

The Editor,
UNIVERSITIES QUARTERLY

SIR,—Since Professor Dobinson has chosen to use a remark of mine as a text from which to embark upon a very interesting account and defence of American schools of education, I may perhaps be permitted to point out that I did not, in fact, overlook the obvious truth that the role of schools of education, whether nefarious or beneficial, is only a single aspect of the general problem of American educational standards and methods. I would agree also, of course, that the social role of education, particularly in all that concerns the integration into a single nation of the diverse elements of which it is now composed, is fundamental for the understanding of the points at which the American system diverges from the systems of countries where such integration can be taken for granted.

But I feel that Professor Dobinson pushes the point too far. For the essentials of the American attitude, a combination of Jeffersonian pragmatism and Jacksonian democracy, were evolved at a time when the problem of nation-building as it was presented by the mass-immigration of non-British elements had scarcely begun. And its effects are seen not merely in the institutions which have had, in fact, to carry out this task, but in others, such as the famous universities of the eastern States, which could afford to take the social integration of their students for granted.

Nor would I agree altogether that it is lack of " that academic freedom which in most European countries has long been accepted as fundamental for the advancement of knowledge " that is the differentiating factor. For academic freedom in the sense in which an Oxford or Cambridge college fellow has it is, in fact, very rare in the Old World too. There is in France, for instance, an orthodoxy of the *Université* as well as of the *Académie*, even if the methods by which it is maintained are obviously less crude. Nor, to put it the other way round, is it hard to think of a score of American university teachers in the past generation or so who have shown, without ill-effects to themselves, abundant originality of thought and expression.

The real question is that of the social recognition of the pre-eminent value of the exceptional intellect, and the shaping of

educational and cultural institutions to give it full scope. It is a conception that all democracies find hard to swallow—and America, being a democracy in a fuller sense than most western European countries, finds it not unnaturally hardest of all. All this was foreseen and explained by Tocqueville and it would be otiose to pursue the discussion further.

Obviously, compared with such fundamental social and intellectual attitudes, the role of schools of education should not be stressed too much. But the most valuable way in which universities and university graduates can counteract a tendency to accepting low but uniform standards is in their own lives to uphold the importance of intellectual achievement as a good in itself. Those who do so in their own persons make the best teachers, as anyone who remembers his own schooldays will readily concur. Whether a teacher is or is not to have the opportunity to teach at the level his own studies have reached is immaterial; the important thing is to have reached it. To sacrifice time that might be spent on a man's subject on teaching technique is something about the value of which it is permissible to be dubious, but to argue it would take us outside the American context.

In conclusion, I am interested to find that Professor Dobinson's view of schools of education in America leads him to regard their insularity as their main weakness. For it provides another illustration of what I believe to be a central paradox in the current American situation, an increased cultural introspectiveness at a time of increased international commitments. But he will be as unpopular with his American friends for pointing this out as I am.

Yours truly,

MAX BELOFF.

REVIEWS

THE APPLE AND THE SPECTROSCOPE. *By* T. R. HENN. (Methuen, 12*s*. 6*d*.)

So far as I know Mr. Henn, in this remarkable and fascinating concentrate, has done something not only new but really valuable.

The book is a synopsis of lectures on Prose and Poetry given to crowded audiences of Cambridge science undergraduates—fortunate young men to be the subjects of so obviously successful an experiment—and is essentially an introduction specially designed for them.

It is an interesting fact that for decades past there has been a gentle stirring of intellectual conscience and consciousness on the part of university scientists—particularly perhaps physicists –who have increasingly felt the need of a more generous intellectual diet. At one Red Brick university for more than 25 years Physics students have been attending (voluntarily and without examination !) first year lectures in some " Arts subject " of their choice, a scheme which has worked quite reasonably well. At the older universities the college system has done much to bring men of different interests —and Triposes—together; but is one to gather that in recent years there has not been the same miscibility, so that the Apple of Knowledge must be brought to the " Spectroscopist " in more direct and more detailed fashion? Whatever the reason, Cambridge is in a proud and favoured position to be able to widen the scope of its science students and is indeed fortunate to have Mr. Henn with the time, energy, knowledge and ability to do it.

Following Mr. Henn's own lead, I called this book a concentrate —which indeed it is—for in a short 166 pages is packed a mass of closely interwoven information with explanations, interpretations, illustrations and even diagrams. As the author himself says in this latter connexion " it seemed appropriate to make some use of the visual and intellectual appeal of diagrams and formulæ, though with full warning of their limitations and inaccuracies ". I like the way in which the author illustrates occasionally with scientific metaphor—who but he would have thought of bringing out inner meaning from " My love is like a red red rose " by picturing a three electrode valve with anode as girl and cathode as rose ! Much poetic licence and many liberties taken—but what fun ! " A primrose by a river's brim a yellow primrose was to him and it was nothing more." For " primrose " read " valve " !

The author's way of treating his subject is, in the body of the book, illustrative, introduced by a brief chapter on the methods of poetry and rounded off by three concluding chapters (which I confess to having read first) which include an excellent " Background to English Literary History." This background covers the period 1300 to 1900 in 35 pages and in Appendix 2 (4 pages) there is a list of 88 Authors—Dante, Boccaccio and Petrarch leading—with contemporaneous events and personages shown in parallel. Wyclif and the Black Death ; Spenser and Galileo ; Donne and Gilbert's *de Magnete* ; Evelyn and Newton ; Scott and Charles Darwin. Wherever possible a great literary figure is matched to a great scientific one—an excellent idea in view of the aim of the book.

The middle main part of this little volume is wisely illustrative, each of the seven chapters having two examples of its special topic :— Death and Love ; Love and Death ; Symbolism and Allusion ; War and Woman ; Shakespeare ; the Bible ; Satire and Romance.

One cannot but be glad to see Shakespeare and the Bible in Mr. Henn's list though 'tis hard to see how they could fitly have been omitted. The poetry of the Bible, its symbolism and imagery, are touched on and commended but the style is not recommended as a model for modern English prose—with reasons given. The two passages chosen from Shakespeare—from *Macbeth* and *Lear*—are strong meat served up with tasty trimmings ; for example, Blake's drawing " Pity " is, so to speak, put in context with " and pity like a naked new-born babe, striding the blast—— ", and is analysed, interpreted, discussed in the light of a most excellent reproduction in the text. I particularly liked the " two white horses, blind, thrust out in long flowing line that harmonizes with a background of storm—— ".

For the rest, no young man, or old one for that matter, with literary leanings can fail to be intrigued and interested by the very sound of some of the poems : " The twa corbies " ; Marvell's " To his coy mistress " ; Wordsworth's " A slumber did my spirit seal " ; Yeats's " The stare's nest by my window ".

This little book will surely be widely read and enjoyed and not only by university undergraduates.

Very appropriately Sir Lawrence Bragg, Cavendish Professor of Physics at Cambridge, has written a foreword in praise and gratitude, expressing the hope that broadening lectures of the kind offered and so enthusiastically attended, may help to offset the narrowness of

outlook engendered by the too early, though seemingly inevitable, specialization in our schools.

The book is impeccably produced and singularly free from errors; publishers, printers and all concerned have clearly enjoyed their work as much as I, in reviewing.

R. WHIDDINGTON.

CRISIS IN ENGLISH POETRY 1880-1940. *By* V. DE S. PINTO. (Hutchinson, 7*s.* 6*d.*)

It is convenient to have a clothes-line on which to hang out one's washing, and for his clothes-line Professor Pinto has chosen that fashionable thing, a crisis. There is, indeed, a crisis of some kind in poetry every hundred years or so ; there was one round about 1600, again in 1700 or thereabouts, and once more in 1800—they might be called the Metaphysical, the Augustan, and the Romantic crises. It would seem that poetry has every century to slough its old skin, absorb new attitudes, find different ways of expressing old things as well as incorporating the new. What this particular crisis is Professor Pinto does not make altogether clear. He seems to hold the view that this is the great crisis since that of the fifteenth century which resolved itself in the sixteenth, thus establishing the Renaissance mode of thought. The present crisis has something to do with " the schism of the soul " which Arnold Toynbee has noted as being the mark of a decaying civilization, itself stigmatized by standardization and uniformity : it has something to do with " the disintegration of the modern consciousness " ; it has something to do with " the complaint of modern humanity finding itself isolated in a hostile or indifferent universe and faced with the horror of spiritual disharmony " ; it has something to do with healing the rift between the inner and outer worlds, and reluctance to accept the Welfare State.

However, the reader need not be deterred by the somewhat intricate clothes-line, for the laundry Professor Pinto displays is admirably selected, and he discusses it with the erudition, sympathy, and depth of understanding we have come to expect from him, in prose, which, as usual in his writing, is flexible, lucid, and persuasive. Only rarely does his theory seem to obtrude, as when he ranks Yeats as a failure, and makes a somewhat disappointing selection from Auden. Passing rapidly over the 'eighties and 'nineties, as

representing the first uneasy stirrings towards the new phase, he gives short *aperçus* of Wilfred Blunt, Henley, Davidson, Lionel Johnson and Kipling (making admirable remarks on the prosody of this last, but others on his meaning which we pass over in pained silence), to begin his real work with Hardy, to whom Housman is appended with due brevity, just as Bridges is given a little space in an admirable chapter upon Hopkins. We are then taken on to the Edwardians and Georgians (Harold Monro and W. J. Turner being somewhat unaccountably left out of the latter), in which Masefield, De la Mare, Abercrombie and Edward Thomas are singled out. Trench Poets (surely Herbert Read should have been among these) carry on the tale to the Imagists and D. H. Lawrence, while T. S. Eliot gets, quite properly, a chapter to himself. An After Eliot chapter brings us to a conclusion with the Auden, Day-Lewis, Spender "group", and a fine appreciation of the work of Dr. Edith Sitwell. These, of course, are not the only poets mentioned.

When he is talking of individual poets, Professor Pinto's judgments are always securely based ; and since he is himself a poet, he knows that what really matters is the intensity of a poet's thoughts and emotions, the poetic pressure created, perhaps by the conditions of his age, perhaps not. What matters is not that the poet should resolve the problems of his age, but the resolution of his own inner conflicts, the glimpses he gives us of the inapprehensible. What matters is whether he can by the labour of imagination find the rhythms, the imagery, the symbols, which will make his words communicative. These things are in the main what Professor Pinto talks about, in the manner of a man who knows what he is talking about, with a delicacy of apprehension and acuteness in analysis unencumbered by any distorting dogma. For though he exploits a theory (exploits would seem to be the right word) he never lets it injure his sensibility. It is difficult to imagine a better or more generous introduction to the poets of the period he has chosen.

BONAMY DOBRÉE.

THE TEACHING OF STATISTICS IN SCHOOLS. A Report of the Council of the Royal Statistical Society, 1951. (1*s*.)

The Teaching of Statistics Committee appointed by the Council of the Royal Statistical Society has followed its report on teaching in British Universities (1947) by a twelve-page report on The Teaching

of Statistics in Schools. That the need for such a report and material for its construction should exist is a reflection of the tremendous change in attitude to statistics during the last fifteen years. The report emphasizes not merely the right of statistics to compete for a place in overcrowded syllabuses but " the broad, educative value of . . the statistical approach ".

The authors of the report do not regard school work in statistics as primarily an opportunity for a new range of exercises in arithmetic and elementary algebra. They consider that " a statistical training encourages a habit of disciplined thinking about ordinary affairs " and that " the development of a balanced and reflective outlook on figures is a slow process, and if it is not begun at school before the child's mind begins to crystallize, it may never take place ". The word *statistics* no longer stands only for the assembly of large bodies of numerical data, or for purely mechanical calculations on these ; its meaning has been broadened to include that critical outlook (destructive and constructive) on figures that is essential to their proper interpretation and use. Although expertise in this matter may be confined to a few specialists no truly democratic community to-day can afford to neglect the diffusion of some knowledge of the subject throughout its citizenry.

From the point of view of the general curriculum, the report draws attention to the alternatives of assigning a niche in the timetable to statistics as a subject or introducing statistical modes of thought into the teaching of other subjects. Both have their advocates ; either may prove successful ; but, say the authors, whatever policy is adopted the chief gain should be in the better appreciation of other school subjects and of the whole life of the individual and the community. A syllabus suitable for this level of teaching is outlined. It is excellently practical in outlook, but fails to mention problems of collecting data and the manner in which collection influences interpretation ; even at this stage, the notion of " designing " an inquiry, so as to obtain as much information as possible in relation to the work done, should be capable of explanation.

In the higher forms of a school, statistics may also be considered in its own right as vocational training. The need for opportunities of specialized study of statistics is stressed, not only for mathematicians but for those pupils whose choice of vocation lies in the sciences (biological, physical, or social), business, administration,

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or politics. The precise needs differ for the various groups, and the schools could help most by establishing a firm basis for subsequent university or college studies. So far as teaching methods are concerned, the report rightly emphasizes that children should collect their own data, by observation of natural and social phenomena, as well as practise methods of statistical analysis. In this connexion, a recent book by B. C. Brookes (a member of the Committee) and W. F. L. Dick* gives an excellent lead on how to teach the subject.

The report then comments on school examinations in statistics ; it recommends that some statistics should appear in mathematical syllabuses, but emphasizes the undesirability of early specialization at the expense of a broad and firm study of the most important branches of mathematics.

An Appendix summarizes the syllabuses for examinations in statistics in the General Certificate of Education Examinations set by the University of Cambridge Local Examinations Syndicate, the University of London Matriculation and School Examinations Council, the Universities of Manchester, Liverpool, Leeds, Sheffield and Birmingham Joint Matriculation Board, and the Oxford Local Examinations ; these are briefly contrasted and criticized.

D. J. FINNEY.

HISTORICAL RESEARCH IN MEDIEVAL ENGLAND. *By* V. H. GALBRAITH. (The Athlone Press, 5*s.*)

THE ELIZABETHAN AGE. *By* J. E. NEALE. (The Athlone Press, 2*s.* 6*d.*)

Two Creighton Lectures, *Historical Research in Medieval England* by Professor V. H. Galbraith and *The Elizabethan Age* by Professor J. E. Neale, published simultaneously by the University of London (The Athlone Press, 1951), show an interesting contrast in the treatment of the formal ceremonial lecture. There is a tradition, as Professor Neale observes, that the Creighton Lecture " should proceed more obviously from reflection than from research ". Reflection may be speculative or it may dwell upon mature conclusions. The substance of Professor Neale's lecture is of the second kind. Why, he asks, was the Elizabethan age not only an age of greatness but of self-conscious greatness ? He finds his answer

* *Introduction to Statistical Methods* (1951), Heinemann, 21*s.*

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partly in the times, partly in the Queen herself. It was a period of revolution in most spheres of human thought and action, providing dazzling opportunities for the ecclesiastic, the statesman, the social climber and the industrial or commercial entrepreneur—an age for the adventurous. Moreover, the individualism thus generated was rapidly developed by that Protestant dynamic without which England could not have stood up to the powers ranged against her. The situation called for cool and confident government, at a time when everything, or nearly everything, depended upon the personal qualities of the monarch. Elizabeth I possessed not only the firmness and the tact required, but she could act as a leader and idol of her people while her conservative instincts restrained their more violent impulses. It is in this paradox of a ruler who could inspire her subjects to adventure while ordering and disciplining their energies into a common enterprise that Professor Neale finds the secret of Elizabethan greatness, a paradox which he works out with great artistry and presents with charm and elegance.

Professor Galbraith's lecture is of the other sort, a much rougher diamond. His subject is one which he and others have touched upon by implication but which has never been treated directly, and one may suspect that this preliminary inspection showed it to be a much bigger thing than had been anticipated. The roughness, then, is in large measure the roughness of the pioneer. For the idea that there could have been any " historical research " in the Middle Ages, as the term is currently understood, is certainly unfamiliar. Yet no historical work, however unambitious, can be produced without some form of research, even if this should amount to little more than the selection of a text to copy ; and, from the other point of view, we cannot make much of a historian's work unless we know something of his idea of history, his purpose in writing, his personal methods and the conventions of his age. Professor Galbraith, therefore, has examined the attitude of some medieval historians and chroniclers to their work ; their status and their opportunities; the purposes they intended to serve and their integrity of mind; the material they had to work upon and their technique of criticism and synthesis. Though he finds a rising standard of achievement from Asser in the ninth century to William of Malmesbury in the twelfth, and thereafter a slow decline accompanied by changes of method, this conclusion, not perhaps entirely unfamiliar, is of less significance than the depressing final paragraph in which he laments the fact

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that most of the greater English chroniclers of the Middle Ages still await competent editing. Until this has been made good, a task which could hardly be accomplished by a generation of scholars, any essay on this enormous theme must of necessity seem somewhat fragmentary ; even though the fragments themselves, as in this instance, may be illuminating and even exciting.

JOHN LE PATOUREL.

THE PRICE OF REVOLUTION. *By* D. W. BROGAN. (Hamish Hamilton, 15*s*.)

This is a very disappointing book. Apparently Professor Brogan sat down to evaluate the cost to civilization of the Russian Revolution and the capacity of the western world to meet its threat. But then his typewriter got the better of him, and he has produced an incoherent series of half-digested essays on modern politics, whose composition suggests that he did not leave himself time to revise a hurried first draft.

One chapter—The United States and the World—stands out from the ruck. It is a well written and thoughtful plea for comprehension by British intellectuals of the changes in America since the New Deal. Of the quality of the rest of the book, the following paragraph is a not unfair specimen :

> " But Palestine is embedded in the Arab world and that world is in travail, though how long the birth-pangs of the new Arab world will last, no one can say. It is, to a numerous linguistic group with a great tradition and a profound sense of religious as well as cultural superiority, a deep source of humiliation that its present political position should be so inferior to what it deems its deserts, that the only Arab state that the outside world finds it necessary to treat with complete seriousness is Saudi Arabia, the Arab state that firmly refuses to adjust itself to the demands of the modern world."

Scattered about in these discursive chapters is plenty of information, though far too much of it is in the form of hastily added footnotes. Professor Brogan's mind is an almost unrivalled museum of curious knowledge about modern politics. But he is a Professor of Political Science, and political science does not merely consist in retailing amusing anecdotes. If *The Price of Revolution* had been

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written by a journalist, it would be condemned as bad journalism. In a professor, polymathy is no excuse for intellectual slovenliness.

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SOME FUNDAMENTAL QUESTIONS OF PHILOSOPHY. *By* A. C. EWING. (*Routledge and Kegan Paul*, 18*s*.)

Dr. Ewing is rightly determined that the beginner in philosophy, whether it be the light-hearted first year student looking for a convenient subsidiary subject or the mildly interested dilettante, shall be under no illusions. He insists again and again that the philosopher's way is arduous and that it offers no very obvious prospect of leading into more pleasant avenues. Philosophy is difficult and it is not immediately useful. These commonplaces perhaps needed re-stating for a public little inclined to pursue the effort of thinking and amazingly indifferent to questions of truth or falsehood. But austerity of mind does seem to be carried a little too far in this book; the attractions which philosophy offers, even to the uninitiated, are too often concealed.

One cannot complain at the exclusion of logic and ethics, though the former may offer enjoyable exercise to the youthful mind and the latter present problems of conduct of intense concern to the adult. Any book must have its limits, and this is concerned with " fundamentals ", that is, with metaphysics and theory of knowledge. Within these limits all the main questions are discussed, the different solutions considered and the author's own viewpoint stated.

Even dialectical materialism, he insists, must be considered wholly from the philosophical standpoint. And only its most ardent advocates will see a trace of passion in his attitude: " Dialectical materialism may therefore be considered on its own merits as a philosophy without introducing political issues, but philosophers who are not communists generally think these merits small " (p. 142). Nevertheless, the philosopher—above all, one who is trying to interest others in his pursuit—must take account of the political and economic reasons why dialectical materialism is so passionately maintained. And how is it to be understood in itself without any reference to the development of thought before Hegel or to the historical circumstances which bring about ever-new formulations of this essentially evolutionary philosophy? This neglect of history is a serious defect in the book and it leads at times to an attitude which

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The style is uniformly dull and often distressingly complex. It is, to say the least of it, unfortunate that the writings of Sartre are so much more likely to win disciples than this cumbersome advocacy of an older, sounder philosophy.

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